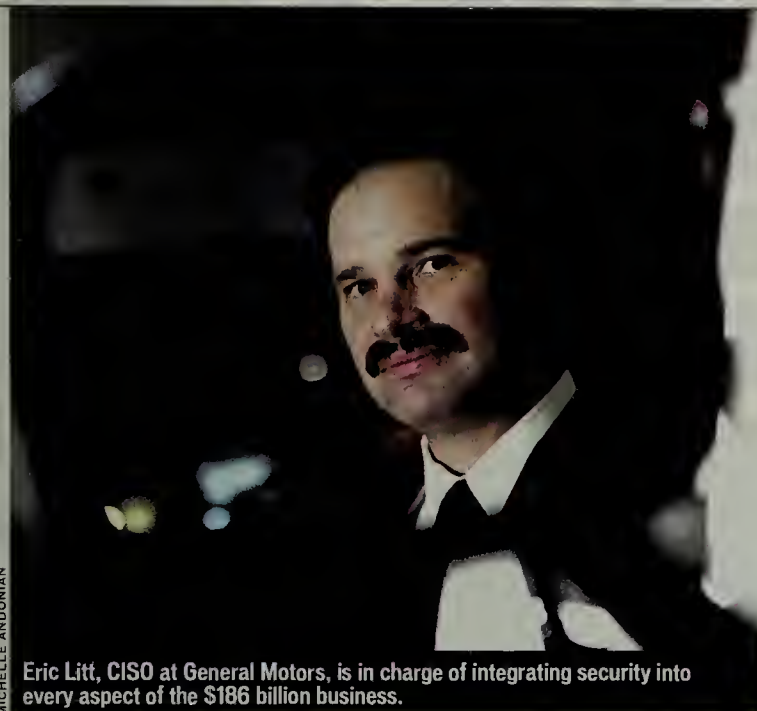


# COMPUTERWORLD

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OCTOBER 4, 2004 • VOL. 38 • NO. 40 • \$5/COPY



Eric Litt, CISO at General Motors, is in charge of integrating security into every aspect of the \$186 billion business.

Chief information security officers are gaining an influential seat at the executive table. Regulatory compliance, risk management and turf battles are all part of the job, reports Jaikumar Vijayan. **PAGE 31**

## PeopleSoft Ousts Conway From CEO Job

Board cites 'loss of confidence' in top exec; some users applaud move, others seek answers

BY MARC L. SONGINI, HEATHER HAVENSTEIN AND TODD R. WEISS

The turmoil surrounding PeopleSoft Inc. and the uncertainty about its future both increased another notch on Friday after the software vendor announced that its board had ousted CEO Craig Conway due to "a loss of confidence" in his ability to lead the embattled company.

PeopleSoft's five independent board members voted unanimously to replace Conway with co-founder Dave Duffield, who had given up the CEO job to Conway in 1999. During a teleconference after the move was an-

nounced, Duffield said that he is "here for the long term" and that his priority will be returning the company to the core values on which it was founded. "We need a little more in the way of vision and strategy, and I think I'm very good at that stuff," he said.

Nonetheless, some PeopleSoft users were caught off guard by the shakeup.

"I don't know how to read this. It's like getting hit cold," said Mike Ten Eyck, manager of information systems at Texas Christian University in Fort Worth and president of the PeopleSoft Higher Educa-

*PeopleSoft, page 45*

## OF THE Rise CISO

### Early Adopters Send Mixed Messages About RFID

Users talk up benefits of tags, but ROI remains distant goal

BY CAROL SLIWA  
BALTIMORE

Companies preparing to test or evaluate radio frequency identification technology didn't get any easy answers at the EPCglobal U.S. Confer-

ence 2004 here last week.

Consumer goods manufacturers facing RFID compliance deadlines from retailers such as Wal-Mart Stores Inc. and Target Corp. encouraged other companies to begin using the technology. They also spotlighted potential benefits, such as the ability to track inventory with greater precision and keep products in stock

and on store shelves.

But some of those same early adopters said that they're still trying to nail down business cases, that the technology isn't mature and that RFID standards remain a work in progress. In addition, the cost of RFID tags and readers has yet to drop to levels that will help users achieve returns on their investments.

"It's going to be pure cost at the beginning. That's a concern, because it cuts into our profitability," said Richard Siegfried, manager of global data synchronization efforts at Binney & Smith Inc., a subsidiary of Hallmark Cards Inc.

*RFID, page 16*

### HP Drops Pricey Utility Technology

Pieces of UDC will be used in modular line

BY MATT HAMBLIN

Hewlett-Packard Co. officials said definitively last week that the vendor is retiring its Utility Data Center offering, a set of data center management tools that costs more than \$1 million and was described by analysts as too much technology for most users to swallow.

But HP plans to incorporate pieces of UDC into a series of lower-cost, modular utility computing products that will be sold separately in an effort to attract more users, including smaller companies that couldn't afford the complete product. The company announced four modular offerings last month, including one designed to centralize the management of blade servers.

Rumors of UDC's demise began circulating among users last June at the HP Software Forum 2004 conference in Montreal. Last week, Nick Vander Zweep, director of virtual-

*UDC, page 45*

ONLINE

Read more about RFID on our Web site:  
**QuickLink a3690**



A black and white photograph of a man in a suit sitting at a desk, viewed from behind. He is looking at a computer monitor. The background shows a window with horizontal blinds. The text "Backseat Driver" is overlaid in large white letters.

# Backseat Driver

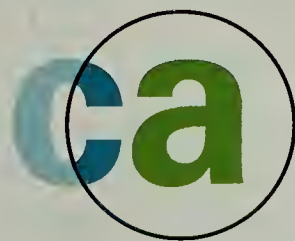
# Driver's Seat



The right storage solution  
doesn't just give you better  
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## Storage Management Solutions

The first step in making better business decisions? Deciding to be in control. CA's Intelligent Storage Management solutions can put you in control of costs, resources and data availability like never before. They provide you with a comprehensive real-time view of your system's storage capabilities, while also providing immediate access to all of your information. As a result, you can manage and monitor your entire storage environment with ease and actually use existing data. As always, it's also vendor- and device-neutral, so you can maximize your current storage resources, saving time and money. With more automated software that can make its own decisions about storage management, you'll have the information you need to make better business decisions. To find out more or to get a white paper, go to [ca.com/driver](http://ca.com/driver).



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# ACCESS



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Xerox found the key to success was helping them get access to  
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Enterprise Rent-A-Car wanted to make their document process more efficient. So they consulted with a team of document experts from Xerox. Working together, they analyzed the document process across thousands of locations worldwide, and initiated systemic improvements in key aspects of filing and retrieving mission-critical documents. By implementing a Xerox Global Services Imaging and Retrieval solution, 2.4 million critical docu-

ments a month are scanned and stored into an electronic repository, making them instantly available over the Enterprise Intranet whenever needed. The result: Documents are managed in a timely manner. Redundancy and errors are cut way back, and security is maximized. To find out how Xerox can bring this kind of time and cost-saving expertise to your business, simply call your Xerox representative or visit our website today.

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10.04.04



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## Blades, Camera, Action!

**In the Technology section:** As the use of special effects explodes on-screen, visual effects studios are trying to keep up by building enormous farms of blade servers to render all of the images. **Page 21**

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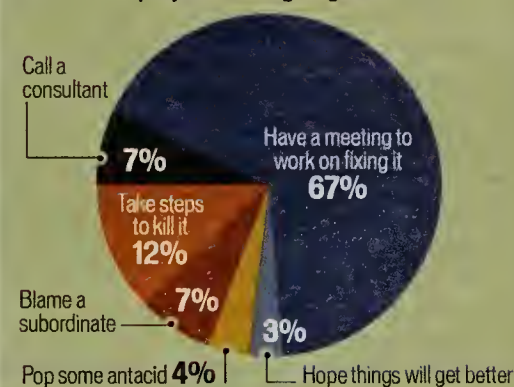
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## ONLINE

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### QuickPoll Results

What do you do when an IT project starts going bad?



Take this week's QuickPoll at [www.computerworld.com](http://www.computerworld.com).

SOURCE: COMPUTERWORLD.COM NONSCIENTIFIC SURVEY, 505 VOTES

### The Dirty Dozen

**SECURITY:** Columnist Douglas Schweitzer outlines 12 key mistakes organizations can make when trying to secure their networks. **QuickLink 49707**

### Poised for Prime Time

**GRID COMPUTING:** Grid pioneer Ian Foster outlines what is needed for the technology to be as useful to industry as it now is for research and academia. **QuickLink 49599**

### Recognizing Risk in Wireless

**MOBILE/WIRELESS:** AirDefense's Anil Khattod reviews the problems of self-deploying wireless devices. **QuickLink 49763**

### What's a QuickLink?

Throughout each issue of *Computerworld*, you'll see five-digit QuickLink codes pointing to related content on our Web site. Also, at the end of each story, a QuickLink to that story online facilitates sharing it with colleagues. Just enter any of those codes into the QuickLink box, which is at the top of every page on our site.

### ONLINE DEPARTMENTS

- Breaking News  
**QuickLink a1510**
- Newsletter Subscriptions  
**QuickLink a1430**
- Knowledge Centers  
**QuickLink a2570**
- The Online Store  
**QuickLink a2420**



## AT DEADLINE

### DOJ Won't Appeal Ruling on Oracle

The U.S. Department of Justice said it won't appeal a federal judge's ruling that allowed Oracle Corp. to proceed with its hostile takeover bid for PeopleSoft Inc. Chief Judge Vaughn Walker of the U.S. District Court in San Francisco last month rejected the DOJ's effort to block Oracle on antitrust grounds [QuickLink 49350]. "While we disagree with the District Court's disappointing decision, we respect the role of the courts in the merger review process," Assistant Attorney General R. Hewitt Pate said on Friday.

### Yoran Quits DHS Cybersecurity Job

Amit Yoran, the government's cybersecurity chief, resigned last Thursday after one year at the U.S. Department of Homeland Security. In an interview, Yoran said his resignation was in keeping with his original agreement to take the job for a year. "I'm not a long-term government kind of guy," said Yoran, a former Symantec Corp. executive.

### CA Says It Will Name CEO Soon

Computer Associates International Inc. reiterated that it expects to name a new CEO within the next 30 to 45 days. But the software vendor denied a published report that said Leo Apotheker, head of global field operations at SAP AG, is the preferred choice of two CA directors. Apotheker isn't a candidate for the CEO job, Islandia, N.Y.-based CA said.

### Microsoft to Fight Patent Decision

Microsoft Corp. said it will contest a ruling by the U.S. Patent and Trademark Office that invalidated a 7-year-old patent on its FAT file system. The patent had been challenged by the New York-based Public Patent Foundation.

# EMC Expands Replication, Storage Management Tools

Open Replicator lets users copy Symmetrix data to rival disk arrays

BY LUCAS MEARIAN

**E**MC CORP. today plans to announce upgrades to several of its software products, including the integration of automated data migration technology with its storage management suite and the release of a data replication tool that supports disk arrays from rival vendors.

EMC also said it has integrated the server virtualization software acquired through its buyout of VMware Inc. earlier this year with its Symmetrix Remote Data Facility (SRDF) replication tool. That will enable users to asynchronously replicate data from a large number of servers at a primary data center to a few systems or even just one at a remote site by creating multiple instances of a server operating system on the target boxes.

But chief among EMC's upgraded products is a new version of the replication software for its Symmetrix high-end disk arrays called EMC Open Replicator. The tool will allow data to be copied to storage devices from IBM, Hitachi Data Systems Corp. and Hewlett-Packard Co. — EMC's main hardware competitors. The company said Open Replicator is due for release in next year's first quarter.

#### Extended Options

"That's great stuff," said Bill North, an analyst at IDC in Framingham, Mass. "It's not unique. But if you're an EMC customer and ... have merged with another company or have regional offices with different storage, you can now have greater flexibility."

On the information lifecycle management (ILM) front, EMC is integrating its ControlCenter storage management platform with a set

of application-aware tools that the company inherited when it acquired Legato Systems Inc. last year. Chuck Hollis, vice president of storage platforms marketing at EMC, said the integrated offering will include Legato Software's EmailXtender for Exchange 2003 and Lotus Notes products, as well as the EMC DatabaseXtender for Oracle, PeopleSoft and Sybase. Shipments are due this quarter.

EmailXtender identifies infrequently used e-mail messages, and DatabaseXtender searches databases for old or inactive records. Both products can move the older data off high-cost primary storage devices to secondary disk systems or tape drives.

John Halamka, CIO at CareGroup Inc., a Boston-based company that operates six

#### ALSO NEW FROM EMC

##### SRDF Star

Replicates data to two remote sites at once.

Due for release in Q1 of 2005.

##### Celerra FileMover NAS Gateway

Migrates files to lower-cost storage devices.

Available now.

##### EMC Express Solution for E-mail

Combines a Clariion disk array with EmailXtender and Replication Manager tools.

Available now.

hospitals, said he plans to test the new ILM offering. "I have to keep medical records for 30 years," he noted. "Would I love to invest in Symmetrix

DMX for the next 30 years? Sure. Unfortunately, I can't afford that."

Halamka has been experimenting with ILM for a year on his 40TB storage-area network, which he manages with ControlCenter and backs up using EMC's SnapView and TimeFinder software. He said he has reached the point where he can automatically migrate data from Symmetrix boxes to EMC's Clariion midrange arrays or tape storage.

"When we initially went down the [ILM] path, the tools to do all of this business-rule-, policy-driven shuttling of data back and forth didn't exist," he said. "They do now."

Halamka added that although he likes the additional upgrades EMC is offering, "obviously, there is still work to do." For example, he said it would be "nirvana" if the time tickets that are used to generate payroll checks within CareGroup's PeopleSoft applications would automatically move from Symmetrix to Clariion. "That's something PeopleSoft has to work on with EMC," Halamka said.

Q 49790

## Sun Ships Java Upgrade

Adds features to boost ease of use

BY HEATHER HAVENSTEIN

Sun Microsystems Inc. last week released Java 2 Platform Standard Edition (J2SE) 5.0, an upgraded version of its programming language with more than 100 new features designed to bolster ease of use, performance, scalability and desktop development.

J2SE 5.0, which was code-named Tiger and announced at the JavaOne conference in June, includes what Sun officials claim are the most significant enhancements to the Java development platform and language since the first release almost a decade ago.

Sun also provided a peek at J2SE 6.0, now called Mustang. Scheduled to be available in

the spring of 2006, Mustang will feature increased performance and added support for XML and Web services.

"We try to have a measurement for how often the community wants to see updates," said James Gosling, the father of Java and chief technology officer for Sun's Developer Platforms Group. "The [Mustang release date] is when we think the community is going to be ready for a new release."

Developers can download J2SE 5.0 from Sun's Web site now. The company said new features supporting faster and more secure coding should help boost Java programmer productivity. The upgrade also supports faster start-ups and a smaller memory footprint.

J2SE 5.0 is an important step for Java in its ongoing battle against Microsoft Corp.'s .Net

development environment, said Stephen O'Grady, an analyst at RedMonk in Bath, Maine. The streamlined start-ups and a friendlier graphical user interface should be especially welcome additions to Java users, he added.

"Particularly for Java applications on the client, it has taken a while for them to start up," O'Grady said. "That has been a problem. Also, from a user's perspective, [Sun] has updated the look and feel. It looks good. It's cleaner, and it's more modern."

The enhancements in J2SE 5.0 reflect demands from corporate users for enterprise-oriented capabilities, such as the ability to manage and monitor applications, said Thomas Murphy, an analyst at Meta Group Inc. He added that Sun "certainly is trying to make a big push to come back again on the client side."

Q 49786



# Financial Firm Consolidates SANs With Eye Toward ILM

## Installs tiered storage network, plans to move toward automated data migration

BY LUCAS MEARIAN

State Street Corp.'s investment management unit has completed the rollout of a tiered storage infrastructure that will be used to consolidate seven storage-area networks (SAN) and set the stage for the eventual adoption of automated information life-cycle management processes.

The movement of data among the various tiers of storage devices is still done manually, according to State Street Global Advisors, which finished the multimillion-dollar installation in September and announced the deployment last week along with storage switch vendor McData Corp.

But the process will be automated over time and driven by predefined policies based on the business importance and age of information, said Bob

Shinn, a principal in the IT department at State Street Global Advisors who is responsible for managing the unit's storage systems. "It's a complete change in how we approach storage," he said.

State Street Global Advisors, which, like its parent company, is based in Boston, deployed high-end and mid-range disk arrays from EMC Corp., a tape library from Storage Technology Corp. and 32 of McData's network storage switches as part of the project.

Shinn said his team also used a new Eclipse 2640 SAN router that McData introduced last week to integrate Brocade and Cisco switches that are part of State Street's SANs at facilities in and around Boston, thereby tying together its data migration pathways.

Altogether, more than 1,000

switch ports connect application servers to the storage devices on the central SAN, which was installed at a new data center in Boston. Different paths to the devices can be dynamically created by the McData switches, Shinn said.

Layered on top of the switched network is McData's SAN Navigator software, which provides topology mapping, asset tracking and automated discovery of storage hardware. "The point is to abstract [the network] to create multiple virtual paths back to the storage," said Patrick Harr, McData's vice president of director platforms.

Bill North, an analyst at IDC, said he's impressed by State Street's architecture but added that the company's approach sounds more like data life-cycle management at this point. "It's about the bits, bytes and buckets," not business information itself, he said.

"When you have particular

classes of business records that have to be stored and retrieved in a certain way, with certain service levels . . . then things have to be more sophisticated," North added.

The new SAN has 250TB of capacity on EMC's Symmetrix DMX and Clariion CX arrays, plus another 500TB on a PowderHorn tape library from StorageTek. Shinn declined to state the specific cost of the project, which included months of classifying data sets in order to determine the appropriate type of storage for them. But he noted

that the price of storage hardware was much lower than it was the last time he bought equipment. "We went from the tens of millions of dollars for our old system to the millions," he said.

Along with the addition of the switched network, Shinn said the most important aspect of the project was the human effort involved in classifying data. "If you haven't done that, then you can't move things throughout the different tiers," he said. "Automated or not automated, you don't have the policies and information to be able to judge what should go where." **49780**

## State Street's SAN Setup

|               | STORAGE                                    | SWITCHES                                   |
|---------------|--|--|
| <b>TIER 1</b> | EMC Symmetrix DMX 1000 and 800 disk arrays | McData Intrepid 10000 and 6140 directors   |
| <b>TIER 2</b> | EMC Clariion CX series arrays              | McData Intrepid 6140 and ED-6064 models    |
| <b>TIER 3</b> | StorageTek PowderHorn tape library         | McData Sphereon Fabric Switch edge devices |

# Three-Year Storage-Over-IP Project Starts to Bear Fruit

BY LUCAS MEARIAN

After three years of work, brokerage Edward Jones & Co. is beginning to see some benefits from an \$80 million investment in a storage-over-IP network that is replicating up to 700GB of data daily to a fully redundant backup site located 1,600 miles away from its main data center near St. Louis.

Edward Jones CIO Rich Malone said last week that the Maryland Heights, Mo.-based company is still "a long way from being where we need to be" on the project. But over the past year, Edward Jones has reduced its overall data backup window from 12 hours to four, while more than doubling the amount of information it replicates to its secondary data center in Tempe, Ariz.

"At the beginning of the year, we ran 96 hours behind with our database replication," said Bill Hayden, director of

data services at Edward Jones. "Four days behind is nowhere near the service level I was expected to provide."

Most of the improvements over the past year have come through software upgrades and fine-tuning the systems in the two data centers, he said.

According to Dianne Mc-

Adam, an analyst at Data Mobility Group LLC in Nashua, N.H., it's still rare for a financial services firm the size of Edward Jones to be using a storage-over-IP network and asynchronous replication technology. Most large brokerages continue to rely on synchronous replication "because they can't afford to lose any transactions and they need the performance of a high-bandwidth fiber connection," McAdam said.

Edward Jones, which began the storage project in 2001 [QuickLink 25699], is using the IP-based technology to link a storage-area network (SAN) in its headquarters data center to one in the Tempe facility. The network is built on Fibre Channel-over-IP switches from CNT Corp., plus data replication and mirroring tools from EMC Corp., E-Net Corp., Quest Software Inc. and Network Appliance Inc.

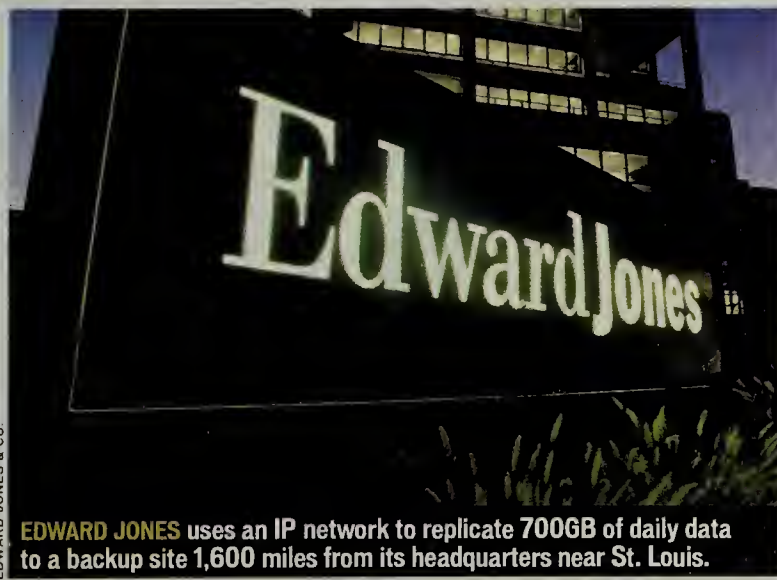
The project's goal is to enable Edward Jones to shift its transaction-processing activities from St. Louis to Tempe without a hiccup. "When we get to where we want to go, [disaster recovery] will become a thing of the past," Malone said. "It becomes, 'OK, I've got trouble at one data center. I'm going to shift the load to the other center.'"

The asynchronous replication approach has proved to be reliable, Malone said. But some technical issues remain. One major challenge is synchronizing all 450TB of data at both sites to ensure that the

information is fully updated. "It's something that becomes more difficult when you're sitting 1,600 miles from your backup center," Hayden said.

Another problem is that the company's mainframe-based VSAM flat files are on a four-hour replication cycle, matching the length of the current backup window. "We simply reached a limit on the current technology," Hayden said, adding that the bottleneck stems from Edward Jones' use of older versions of EMC's Symmetrix disk arrays and replication software. Upgrades by the fourth quarter of next year should help correct the problem, he said.

Malone said DB2 database replication has also been problematic because the replication engine that the company uses doesn't allow incremental updates on the target database and supports only one update at a time. He added that he's considering IBM's upgraded DB2 Propagator tool to help speed up the replication process. **49629**



EDWARD JONES uses an IP network to replicate 700GB of daily data to a backup site 1,600 miles from its headquarters near St. Louis.



## BRIEFS

## CA Plans to Trim Workforce by 5%

Computer Associates International Inc. said it plans to cut 800 jobs worldwide in the hope of reducing its annual operating costs by \$70 million. The layoffs, which were predicted two weeks ago by financial analysts [Quick-Link 49647], will cut the company's workforce by 5%. CA said the reductions will be completed this month and include layoffs in its development group.

## Bank to Install 180k Cisco Phones

Cisco Systems Inc. said Bank of America Corp. plans to install about 180,000 of its IP telephones over the next three years. The deployment by the Charlotte, N.C.-based bank will also include centralized call control and voice-mail systems from Cisco. Electronic Data Systems Corp. will work with the bank on the project. Financial details weren't disclosed.

## Microsoft Releases Open-Source Code

Microsoft Corp. continued its flirtation with open-source technology by posting the source code for a tool called FlexWiki on the SourceForge.net Web site. The release was its third contribution of open-source code but the first involving an actual application, albeit one that isn't a commercial product. FlexWiki can be used to create Web sites called wikis, which let users add and edit content.

## Intel Drops Plans For Wi-Fi in Chips

Citing a lack of interest among PC vendors, Intel Corp. has dropped plans to build wireless access point technology into the Grantsdale chip sets it announced in June. Intel said the decision wasn't related to any technical issues.

## ON THE MARK

HOT TECHNOLOGY TRENDS, NEW PRODUCT NEWS AND INDUSTRY GOSSIP BY MARK HALL



## For Xerox, the Color of Money . . .

. . . is color. Xerox Corp. has seen better than 40% growth in unit sales of its color printers and multifunction systems (those that print, fax and scan) over the past 12 months, leading to a 24% profit growth during that period. Not bad for a company whose name is synonymous with black-and-white paper copies. But

betting on color's long-term success to continue brightening Xerox's balance sheet has some potentially dark spots. Color printing, while dramatically cheaper than it was only

7¢

Additional cost for a printed color page compared with a B&W one, says Xerox

a few years ago, still costs more than the 1.5 cents per page for black and white. So that means businesses will likely restrict the use of color to design-heavy documents and

those where color is critical to their communications. There also are technical problems, one of the biggest being color consistency. L.K. Mestha, principal scientist at Stamford, Conn.-based Xerox, explains that even in the best network printers, the color saturation on a page can change in the middle of a print run. So he and other Xerox scientists have invented what they call a spectrophotometer, a device that will reduce the time it takes a printer to

automatically check the color consistency on a page from 24 seconds to less than one. The device is beyond the prototype stage but probably won't arrive in printers until late 2005 at the earliest.

## Thin clients 'same as Mac' in . . .

. . . penetration of the corporate desktop market. Which is pretty good news for Mike Deneffe, senior director of the Winterm business line at Wyse Technology Inc. in San Jose. That measly 2% to 3% market share is enough to spur Wyse to unleash a handful of thin-client systems in the coming months.

Available this week, the Winterm 3150SE and 9150SE offer improved performance over the company's current products, Deneffe says. The 3150SE costs \$399 and is the first thin client to ship with Windows CE 5.0, Wyse claims. Priced

Wyse's thinner thin client



at \$499, the 9150SE will offer Windows XP Embedded as its operating system. Also new is a \$349 S-Class device, which is about as big as a VHS video-cassette and uses a low-power CPU from Advanced Micro Devices Inc. that lets it run without a noisy fan. It will ship next month running Windows CE 5.0, and a Linux version is due in December. The slightly larger V-Class thin client, using a chip from Transmeta Corp., will also ship in December for \$449 with Linux, CE or XPE. Linux "is the fastest-growing segment we have," DeNeffe says.

## Control access to distributed apps . . .

. . . via SingleKey 3.0, an appliance shipping Oct. 15 from Bayshore Networks LLC in New York. According to General Manager Francis Cianfrocca, SingleKey lets you establish application access policies at a central location, deploy the appliances in front of application servers and manage who can access your software assets. You can also link SingleKey to your enterprise directory to ease creation of an access-rights database on the appliance. Version 3.0 adds the Linux 2.6 kernel and improved performance. Prices start at \$5,000.

## Serial ATA NAS appliances appeal . . .

. . . to "highly sophisticated customers" in midsize to large companies, claims Geoffrey Noer, senior director for storage products at Rackable Systems Inc. in Milpitas, Calif. Whether urbane sophisticates or back-country rubes, most systems administrators should appreciate the specs for



Rackable's S3116 NAS Server

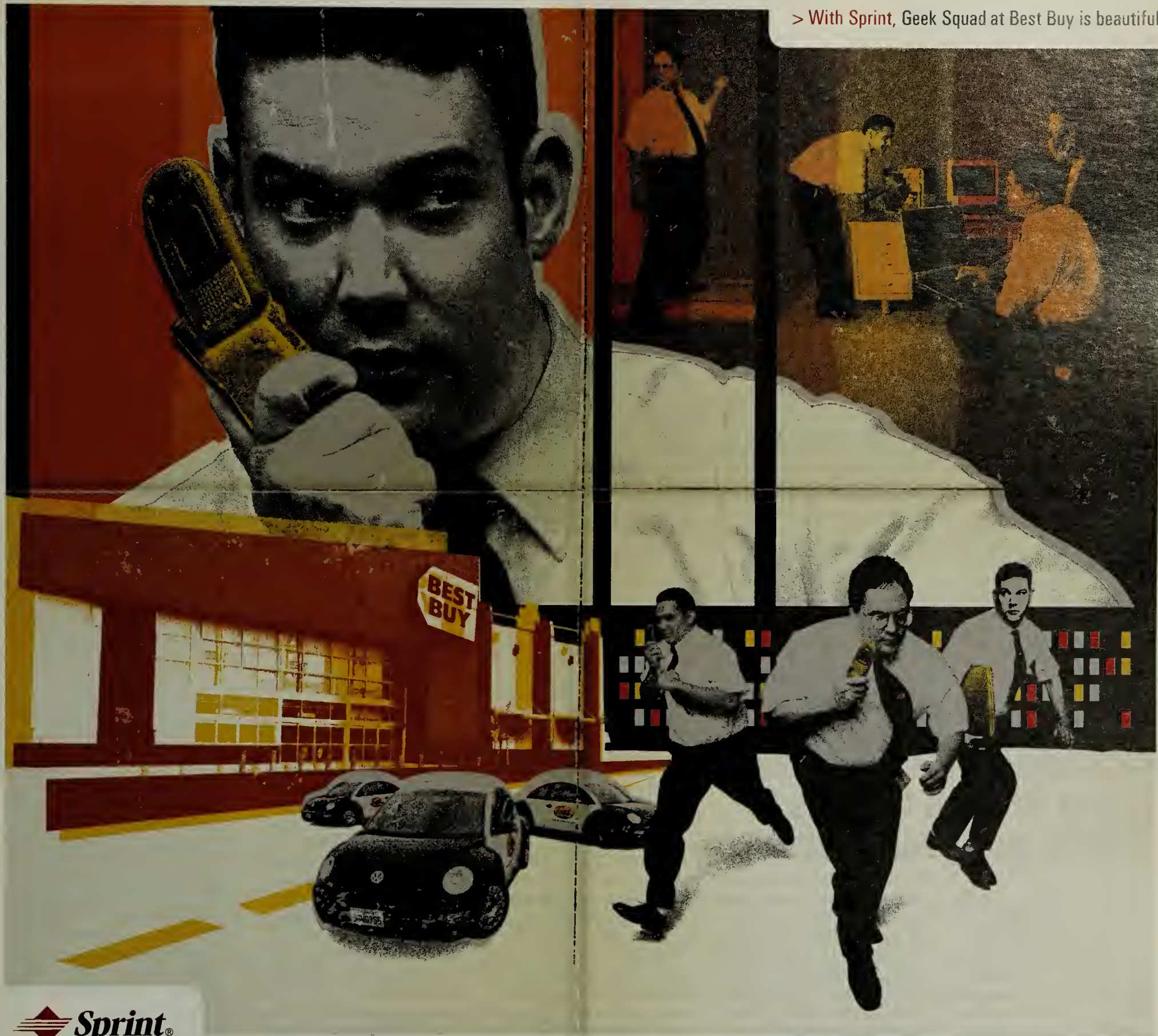
Rackable's latest Serial ATA network-attached storage device. The S3116 NAS Server ships with 4TB of storage capacity (expandable to 100TB), plus 4GB of RAM and two 1Gbit/sec. Ethernet ports. The S3116 can handle Linux, Mac, Unix and Windows clients out of the box and starts at under \$20,000.

## Salesforce.com targets help desk . . .

. . . and other customer support applications with the same pay-as-you-go software model it successfully used to attack licensed CRM programs from the likes of Siebel Systems Inc. Supportforce.com includes complete customer support and help desk tools as well as knowledge management capabilities, Web self-service and other customer-support features, says Salesforce.com Inc. It's available in 11 languages, with monthly fees ranging from \$17 to \$125 per user, says CEO Mark Benioff. Sheryl Kingstone, an analyst at The Yankee Group in Boston, says she doesn't expect Supportforce.com to compel users to "rip and replace" customer support tools from vendors such as Amdocs Ltd.'s Clarify unit and BMC Software Inc.'s Remedy Corp. division. But, Kingstone adds, it could be ideal for companies that want to place customer service agents in their own homes or quickly ramp up support capabilities, because there's no software to install or maintain. She argues that it could also boost offshore work, since agents in India or elsewhere won't need local application infrastructures to get started. ☎ 49751



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# IT Aids Florida Utility Workers

But outage management applications may fall short with guest repair crews

BY THOMAS HOFFMAN

**E**LECTRIC UTILITIES in Florida have been able to leverage IT to help them respond to the widespread power outages caused by the four hurricanes that have hammered the state over the past six weeks. But limitations in some of the systems are making it hard to fully automate the process of coordinating the repair work.

For instance, most power companies in the Southeast have installed new outage management systems since 2000 to help them identify the equipment that's causing a specific power disruption and dispatch work crews to the scene, said Rick Nicholson, an analyst at Meta Group Inc.

But when a hurricane hits, the companies often recruit thousands of repair workers

from across the U.S. and Canada for assistance. Because those workers rarely have mobile devices that are compatible with a utility's outage management system, electronic work orders typically can't be dispatched to them, Nicholson said.

"That's a problem, and I'm not aware of any utilities that have adequately solved this," said Nicholson. In most cases, power companies have dispatchers call guest employees on cell phones to give them their work orders, he said.

Dennis Klinger, CIO at Florida Power & Light Co., said the Juno Beach-based utility gives radio systems or cell phones to transient repairmen if they don't have mobile devices that will work with its outage management system.

"Sometimes their technol-



FLORIDA POWER & LIGHT linemen work to restore electricity in Boynton Beach.

ogy is compatible with us, sometimes not," Klinger said. He added that if cellular communications have been disrupted in a particular area, guest workers fill out paper-based work orders and return them to temporary "staging sites" set up by FP&L.

In the aftermath of a major storm like Hurricane Jeanne,

the latest to plow across Florida, "our process of getting information to the field changes dramatically," said Becky Harrison, director of distribution services at Progress Energy Inc.'s operations in North Carolina and Florida. "We know that they're not going to be able to get orders electronically in a storm like this."

After Jeanne moved out of Florida, Raleigh, N.C.-based Progress Energy assigned "feeder coordinators" — typically, local repairmen — to oversee particular areas and dispatch work orders to visiting crews, using information from its outage management system, Harrison said.

## Tracking Customers

The system that the company uses in Florida is driven by an Oracle database, and Harrison said it has been "extremely valuable" for identifying customers who lost power and tallying the percentage of customers who have had their electricity restored. About 722,000 of Progress Energy's Florida customers lost power as a result of Jeanne, but the utility expected to have all of them back online by the end of the day this past Friday.

Outage management systems have other strengths as well, Harrison said. For instance, Progress Energy can use its system to determine an estimated time of repair for a particular area. It then can provide callers to customer service centers with an automated response telling them when power should be restored.

"One of the things we've found very critical in storms is that it's just as important to keep customers informed about restorations as it is about making the restorations themselves," Harrison said.

☎ 49798

## MORE NEWS ONLINE

FEMA is using a new intranet-based system to help support hurricane relief efforts:

QuickLink 49785  
www.computerworld.com

# Panel Prefers Carrots to Sticks on Cybersecurity

BY GRANT GROSS  
WASHINGTON

Despite the indifference that many corporate executives show about IT security threats, now isn't the time for the U.S. government to mandate cybersecurity standards to private industry, a panel of government officials said last week.

Instead of using a "stick" approach, Congress could develop some "carrot" incentives for companies looking to upgrade their cybersecurity efforts, said Bob Dix, staff director of the technology and information policy subcommittee of the House Government Reform Committee.

The subcommittee is considering several incentives for cybersecurity efforts, including an investment tax credit and a limit on liability for companies adopting cyberse-

curity best practices, Dix said.

Even though Dix and Chrisan Herrod, chief security officer at the Securities and Exchange Commission, both expressed concern over the state of cybersecurity in the U.S., they stopped short of advocating government-defined standards. Instead, best practices should be defined by the private sector, Dix said.

## Lack of Consensus

Part of the problem is that there's little agreement on what cybersecurity best practices should be, Herrod said. "I don't think it's possible to mandate something when you don't have agreement on what that something is," she said.

One industry may require different standards than another, and a small business may have different cybersecurity

requirements than a large company, said Laura DeMartino, legal adviser for cybersecurity at the Federal Trade Commission. "A broad [government] mandate may not be needed for a company that doesn't maintain sensitive consumer information," she said.

Panelists said many CEOs still don't view cybersecurity as an important corporate governance issue. "The threat is real, and the time for action is now," Dix said.

Herrod said she's "very disappointed" in the lack of effort among businesses and the government to develop agreed-upon best practices.

"It's a lot of talk and little demonstrable action," she said. "CEOs in corporate America still don't get it — they still don't concern themselves with information security... as much as you would think they would." ☎ 49793

Gross writes for the IDG News Service.

## Technology Moves Close to Crews

**TO HELP** it respond to the hurricane-induced power outages in the Sunshine State, Florida Power & Light has set up "staging sites" at empty fairgrounds and parking lots and is using IT-equipped trailers to coordinate the distribution of work orders and supplies to hundreds of repair workers.

The staging sites are also being used to find hotel rooms for transient workers, said Dennis Klinger, the utility's CIO. The sites typically consist of four to eight trailers that are outfitted with workstations, copiers and fax machines, Klinger said. Diesel generators and satellite dishes are brought in if there's no power or communications service in the area.

Sometimes the utility installs multiple T1 lines to support an individual staging site and facilitate communication about power restoration efforts with FP&L's central command center. "Satellite communications has really helped us, since the telecommunications providers are typically hit just as badly as we are," Klinger said.


Both FP&L and Progress Energy use modeling tools to estimate the number of customers who are likely to lose power during a storm and the number of repair crews that will be needed to restore electricity. The tools gather data about the damage caused by hurricanes, as well as the track of approaching storms.

FP&L relies on a combination of Unix and Windows systems to do the modeling, while Progress Energy has developed a set of homegrown applications in Visual Basic.

The modeling applications aren't completely accurate, said Becky Harrison, director of distribution services at Progress Energy's operations in North Carolina and Florida. But, she added, "they give us a relative range and a scaling factor that we can use to start acquiring external resources to help us."

— Thomas Hoffman





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## BRIEFS

## Microsoft Seeks Stay on Ruling

Microsoft Corp. asked a judge in Luxembourg to suspend the European Commission's antitrust ruling against the company, arguing that any technical secrets it's forced to reveal can't be retracted if an appeal succeeds. Microsoft made its case during a hearing at the European Union's second-highest court, the Court of First Instance. The court could take up to two months to issue a decision.

## Red Hat Acquires Netscape Software

Red Hat Inc. has agreed to buy the assets of Netscape Communications Corp.'s Security Solutions unit from America Online Inc. for up to \$23 million in cash. The deal, which is due to be completed by Nov. 30, includes Netscape's directory server and user authentication tools. Raleigh, N.C.-based Red Hat said it will add the software to its open-source product portfolio within six to 12 months.

## Munich to Proceed With Linux Rollout

City officials in Munich have decided to go ahead with a desktop Linux migration project involving 14,000 PCs, despite concerns that legislation being considered by the EU could create patent-infringement problems for users of open-source software. The plan to equip the city government's PCs with Linux and open-source desktop applications had been put on hold in August.

## Nortel Trims Plan For More Layoffs

Nortel Networks Ltd. said it has reduced the number of jobs that will be cut in a new round of layoffs from 3,500 to 3,250. The cutbacks are due to be completed by June and will affect about 1,400 workers in the U.S. and 950 in Canada, the Brampton, Ontario-based company said.

## BI Projects Pose Big Hurdles for Companies

## IT execs contend with technical, cultural challenges

BY MARC L. SONGINI  
PALM DESERT, CALIF.

**C**OMPANIES can use business intelligence tools to make big improvements in their operations, but numerous technical, cultural and internal-process challenges must be overcome first, according to IT managers at Computerworld's Business Intelligence Perspectives Conference here last week.

The people and process issues can be even more daunting than the technical ones, said Bubba Tyler, CIO at Quaker Chemical Corp. in Conshohocken, Pa. For the past 10 years, Quaker Chemical has used software from SAS Institute Inc. to do data analysis and reporting. But the project wasn't a simple matter of installing the applications and giving workers access to them, he noted.

"It was a nine- to 10-year process and a heck of a big investment for a company of our size," said Tyler, who spoke at the conference. He noted that the chemical company moved ahead slowly and had to continually re-examine the BI model it was putting in place.

The addition of the SAS 8 software also required Quaker Chemical to collaborate and share information on a global basis, prompting it to tie employees' pay to their level of cooperation on the project.

In addition, the company had to create a common business intelligence language — a time-consuming task — and speed up the collection of data, Tyler said. It also developed a homegrown query tool to make SAS 8 palatable for widespread use, although Tyler has said he might replace that with a set of simpli-

fied user interfaces built into a SAS 9 upgrade released last spring [QuickLink 45897].

During a user roundtable discussion, Andy George, senior vice president of technology at ProfitLine Inc. in San Diego, recommended that companies phase in their BI implementations.

ProfitLine, which manages billing and other administrative functions for telecommunications companies, uses Business Objects SA's WebIntelligence software to analyze and audit customer bills. George said that during ProfitLine's rollout, ensuring the validity of data was a big challenge because so many people were accessing information and inadvertently corrupting it. That prompted the company to put a "data czar" in charge of

maintaining the integrity of data, he said.

Information security was a major issue for the municipal government of Falls Church, Va., said panelist Shirley Hughes, the city's chief financial officer and general manager. When Falls Church moved from 2,200 separate spreadsheets to a more consolidated business intelligence system, it required all employees to read and sign a document that explained proper procedures, such as not sharing passwords. In addition, access

to the BI system is "tightly controlled," Hughes said.

Proper maintenance of data being used in BI applications is so crucial that companies should seek legal advice about what can and can't be stored on a long-term basis, said Al

Brill, senior managing director of technology services at Kroll OnTrack Inc.

The Eden Prairie, Minn.-based company uses home-grown analytical systems to help collect and present data to lawyers for use in court. But Brill warned of "vampire" data that could linger in a system for years and then "come back to bite you in the neck." As an example, Brill cited the possibility that old e-mail messages could be subpoenaed during litigation.

End-user access to BI systems has to be monitored regularly and kept current, Brill added, noting that workers who change jobs within a company might retain the ability to access data they should no longer be able to see.

Brill described business intelligence as potentially the most important technology investment that a company can make. "It deserves the kind of planning and thinking that a project that potentially means life and death for a company should have," he said. "I don't think there are any recipes for success, but there are a heck of a lot for failure." **Q 49796**



BRILL warned of "vampire" data that could "come back and bite you in the neck."

NED REDWAY

## Users Seeking Ways to Analyze Unstructured Data

PALM DESERT, CALIF.

For some attendees at the Business Intelligence Perspectives Conference, the next big challenge involves trying to exploit various types of unstructured data to help improve corporate performance.

Several IT managers at the event said they're pursuing ways of using information such as paper documents, text files, and e-mail and voice-mail messages for business intelligence purposes — even though the information isn't formatted in data warehouse tables.

For example, Niis/Apex Group Holdings plans over the next year to start using SAS Institute software and a homegrown tool to mine medical claims records for information, according to Jody Porrazzo, director of econo-

metric risk strategy at the insurance services company in Princeton, N.J.

The company already uses a SAS 9.3-based system for applications such as creating pricing models for insurers. But Porrazzo said specially trained staffers have to manually cull data from medical claims, which can be hundreds or even thousands of pages long. To simplify that process, Niis/Apex is developing a tool that will work with the SAS software and include a set of built-in rules for automating the process of parsing the information in claims.

H&R Block Inc.'s Option One Mortgage Corp. subsidiary plans to custom-develop a system that can convert inbound and outbound calls into searchable data, said Matt Slonaker, director of

business information at the Irvine, Calif.-based lender.

Option One already uses a mix of software from Oracle Corp. and Microsoft Corp. to help employees assess and manage the risks on loans, Slonaker said. Now, he added, it hopes to convert recordings of phone calls into a text format that can be used to study the behavioral patterns of delinquent borrowers and try to identify customers who plan to file lawsuits against the company.

For instance, the application will be able to track how many times a borrower says the word *litigate* during a call and then help Option One employees score the likelihood that he will take the company to court, Slonaker said.

— Marc L. Songini



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# Ex-CIO Promotes Rural U.S. Alternative to Offshoring IT

## Low-cost services firm does work in Arkansas facilities

BY PATRICK THIBODEAU

**K**ATHY BRITTAIN White, a former big-league CIO, is capitalizing on her connections to win clients for her tiny, rural IT services company, which she hopes will eventually compete with offshore development firms.

White's firm is getting interest and IT work from marquee companies such as Mattel Inc., Sarnoff Corp. and Cardinal Health Inc., where White was CIO from 1999 to March 2003.

That's not bad for a year-old business based in Jonesboro, Ark., that has two development centers, each with 15 employees. White, founder of Rural Sourcing Inc. (RSI), is a long-time supporter of using low-cost IT workers in rural areas of the U.S. instead of sending

technology work to India or China.

People who know White, such as Rich Kurowski, vice president of IT at Cardinal in Dublin, Ohio, said her IT savvy gives her model the potential to work. "Kathy can make things happen, and does make things happen," he said.

Kurowski, who is considering a pilot IT project with RSI, said he sees White's model as an alternative to offshoring.

"She knows how high the bar is for really putting this in place," said Joe Eckroth, CIO at Mattel. "She understands what the end result has got to be." White is on the board of directors at the El Segundo, Calif.-based toymaker.

White's approach is to build development centers, linked to local universities, that are professionally managed and



WHITE says the "ongoing challenge is to provide a quality product."

feature rigorous development methodologies and training. "The ongoing challenge is to provide a quality product, just like any company would," White said.

Cost is a major consideration. RSI charges \$38 to \$60 per hour, depending on the skills re-

quired. Eckroth, who has been using RSI workers for about a year, said the cost is about a third of what it is in major metropolitan areas. He said RSI is ideal for projects that "you want to keep near you, like business intelligence."

### Business Connection

In the past few weeks, Sarnoff CIO Tim Mitchell assigned RSI some intranet development work that would otherwise have gone to his offshore provider. But he's known White from professional CIO

organizational work, and that connection opened the door.

Mitchell said he's especially interested in RSI as a potentially reliable and stable source of U.S. workers, a requirement for some government contracts. Sarnoff is a Princeton, N.J.-based defense and electronics company and the successor to RCA Laboratories.

Wooed by state officials, RSI will open a facility in New Mexico in January and one in North Carolina by June, White said.

Other firms are trying the low-cost domestic model, too. Jeff McCaskey, president and CEO of Aurora Consulting Group Inc., a 51-employee IT contractor on the outskirts of Buffalo, said pricing below major-market costs "is exactly how we survive."

McCaskey said he pays his Web developers \$60,000 to \$80,000 per year, while similarly skilled workers in the New York metro area can earn six figures. He added that he's convinced he can compete with offshore firms. Mattel's Fisher-Price division is among his customers.

Big IT services firms also use workers in low-cost areas of the U.S., not just at offshore sites. Capgemini U.S. LLC, for instance, operates 22 service centers worldwide, including a 500-employee site in Kansas City, Mo., a low-cost area.

Kansas City employees supplement offshore development by working on projects that don't require additional customer interaction and rely heavily on repeatable development processes, said Terry Jost, vice president of outsourcing services at Capgemini. He said he questions whether a rural facility can truly scale up to handle big IT projects.

But White said she doesn't see a problem. She noted that a recent help-wanted ad for a

## H-1B Visas Nearly Gone

WASHINGTON

### THE CAP ON H-1B VISAS

granted to foreign workers, set at 65,000 for the 2005 fiscal year that began Oct. 1, is expected to be reached within weeks.

Applications can be filed six months before the fiscal year begins, and by August, the U.S. Citizenship and Immigration Services agency had received 45,900 H-1B petitions. Based on that pace, immigration experts expect the cap to be reached at its earliest point ever in the fiscal year.

The fiscal 2004 cap, also set at 65,000, was reached in about five months.

There has been a push in both houses of Congress to increase exemption limits for foreign-born individuals who have earned Ph.D.s or master's degrees from U.S. universities. But action before the scheduled Oct. 8 congressional adjournment is seen as unlikely.

Vic Goel, an immigration attorney in Greenbelt, Md., said a quick closing of the cap would leave employers unable to hire highly educated foreign professionals for nearly a year. "If we are making that [educational] investment, we need to reap the return of that investment," Goel said.

But Russ Harrison, legislative representative for the IEEE-USA, said the visa program "creates a strong incentive to push down wages and discourages employment of American workers."

- Patrick Thibodeau

program manager drew 360 applicants from all over the U.S. "I haven't been a little operator," White said. "I've been at very, very big companies. I don't intend to stay small."

49795

## OFFSHORING NEWS

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QuickLink a2290  
www.computerworld.com

## Compuware Expands Analysis Tools for Visual Studio Users

BY HEATHER HAVENSTEIN

Looking to help Microsoft developers purge bugs earlier in the development cycle, Compuware Corp. last week said it plans to add a pair of tools for eliminating security vulnerabilities from applications and testing their ability to withstand processing errors.

The unnamed products are designed to work with Microsoft Corp.'s Visual Studio development tools and will be released as part of Compuware's DevPartner performance analysis software line. Compuware also said the next release of its DevPartner Studio Professional Edition tool set is due in mid-2005, after Microsoft's planned launch

of Visual Studio 2005.

Peter Varhol, DevPartner product manager at Detroit-based Compuware, said the plans for adding new functionality to DevPartner Studio haven't been finalized. But, he noted, the upcoming release will provide more advanced performance analysis plus built-in advice for improving application performance.

"We're taking a more holistic view of application performance," Varhol said. "We're not only presenting [developers] with information on many different aspects of their applications' performance, we're also advising them on what they can do about it."

Compuware's first new tool,

expected to be available by year's end, will simulate attacks on applications to help developers identify security vulnerabilities. The second product is being tailored to help developers ensure application reliability when handling errors, something that Varhol said is typically difficult to test. That tool, expected to be out early next year, will leverage fault simulation technology to emulate real-world errors.

The new products are designed to corral application errors early in the development process, when they can be fixed at less cost and more quickly than if they move further along in the development cycle, said IDC analyst Melissa Webster.

Compuware hasn't set pricing for either of the upcoming products. 49801







# Physical, IT Security Converging, Users Say

**Trend increases effectiveness, cuts costs at companies**

BY JAIKUMAR VIJAYAN  
DALLAS

**T**HERE IS a growing need for companies to unify the management of IT and physical security functions, despite the challenges involved in doing so, said users and analysts at the ASIS International 2004 trade show here last week.

A closer integration of the two functions can yield significant cost benefits and improve an organization's ability to detect and respond to problems, said Lew Wagner, chief information security officer at Clarian Health in Indianapolis.

"You have enhanced responsiveness [to security incidents] because you don't have to worry about cross-coordinating your efforts," Wagner said.

The increased awareness and information sharing that are enabled by a more inte-

grated security operation also help cut costs by eliminating duplicate efforts, he said.

Underscoring the trend, Alexandria, Va.-based ASIS International and the International Information Systems Security Certification Consortium, known as (ISC)<sup>2</sup>, last week announced that they have agreed to mutually endorse each other's professional certifications. ASIS administers the Certified Protection Professional credential, which is largely for physical security practitioners, while (ISC)<sup>2</sup> administers the popular CISSP program for IT workers.

Driving the need for unified security management is the increasing use of IT in physical security products and services, said Greg Holliday, regional director of security at Crescent Real Estate Equities Ltd. in Dallas.

"The biggest trend here at the show is how computers and IT as a whole are improving the delivery of security services," Holliday said.

Improvements in computer memory, storage, networking and processing capabilities have made technologies such as physical access control and video monitoring more powerful than ever before, said Glenn Sandford, vice president of Whelan SFI, a provider of physical security services in Columbia, Md.

"The traditional security folks are very challenged by the rapid pace of information technology being used in physical security products and services," said Ray Bernard, principal consultant at Ray Bernard Consulting Services in Lake Forest, Calif.

Companies also increasingly view IT and physical security as part of a broader set of operational-risk management issues that need unified oversight, said Steve Hunt, an analyst at Forrester Research Inc. in Cambridge, Mass. That trend is further blurring the traditional lines that have existed between the two functions, he said.

Areas such as user provisioning, access control and access monitoring in particular can benefit from the integration, Bernard said.

Another example is smart cards that use identity information in an integrated direc-

tory server to control both facility and network access, Wagner said. "Just imagine the number of keys you wouldn't have to worry about losing or tracking down," he noted.

But companies have to be "careful in defining the touch points between IT and physical security," Sandford said.

Because of the specialized nature of each function, the integration has to take place more at the management level than at the technology level, he added.

Departmental turf issues and the vastly different backgrounds in which the two security functions have evolved also pose a challenge to integration, Wagner said.

Bernard agreed, saying that rather than letting technology issues be the focus of integration, it is more important to "collaborate and strategize" at the management level.

"The technology integration follows where it fits that strategy," he said. **49788**

## Converged Security Management

The factors that are driving the need for unified management of IT and physical security include the following:

**EVOLVING** regulatory compliance requirements.

**INCREASING** use of IT in physical security service delivery and products.

**THE TREND** toward viewing IT and physical security as part of a broader set of operational risk management issues.

**THE NEED** for lowered costs and improved responsiveness.

Continued from page 1

## RFID

in Easton, Pa., that makes crayons and other products.

At the same time, Siegfried noted that he's optimistic about the long-term ROI potential from an increased flow of information, which is expected to help his company improve forecasting and planning with its suppliers.

A manager of e-commerce at a midsize producer of consumer goods said, "We were looking for some more definitive ways to get ROI. The [speakers] were either keeping it to themselves, or it's not there yet.

"We see benefits to this. We see it coming. But it's not there yet, and we don't have the resources of Procter & Gamble," added the manager, who asked not to be named.

Efrain Barreiro, director of

operations at Elan-Polo Inc. in Nashville, said the footwear maker and distributor faces a January 2006 deadline to comply with a directive from Wal-Mart to put RFID tags on pallets and cases shipped to the retailer's Dallas-area distribution centers. He said the ability to press a button and get an accurate inventory count would provide great benefits.

### High Tag Costs

But Barreiro said that as much as 70% of Elan-Polo's shoe business involves high-volume, low-price products. When he runs the numbers, he needs 5-cent tags to make the RFID investment pay off.

However, Gartner Inc. analyst Jeff Woods estimated that RFID tags typically are still selling for 40 to 50 cents apiece.

In many ways, the pros and cons of adopting RFID haven't changed substantially since

the technology became a hot-button issue last year, after Wal-Mart directed that its top 100 suppliers begin tagging pallets and cases by the start of 2005. The retailer updated its plans in June, saying it expects the next 200 suppliers to be on board at the start of 2006.

"The faster payback is really going to be upstream, in working with our raw materials and finishing-goods suppliers and looking at how we manage our materials within our operations," said Mike O'Shea, director of corporate RFID strategies and technology at Kimberly-Clark Corp., which started conducting RFID field trials in 2002.

But an ROI isn't expected for a few years. First the Irving, Texas-based company has to do the business process re-engineering necessary for it to take advantage of the information gathered through RFID

technology, according to O'Shea. He said that in the near term, Kimberly-Clark views its RFID work as a research and development effort with no immediate payback.

Jim Flannery, director of global customer development at Cincinnati-based Procter & Gamble Co., another early adopter of RFID, said the company is still figuring out which business processes to change.

"We're working with our trading partners, trying to figure out where to get value," he said. "What's clear is that the business cases are going to be different based on different [product] categories."

Flannery said the justification is more apparent in P&G's pharmaceutical business, where RFID is viewed as a technology that can help curb counterfeit drugs and bolster consumer safety. But in product categories that are optimized around bar-code

technology, there's more work to do, Flannery said.

Despite the encouragement of early adopters, launching RFID pilot projects isn't always possible. Greg Vick, director of distribution systems and Web development at Unified Western Grocers Inc., a Commerce, Calif.-based food wholesaler and cooperative, said he went to the conference to try to find a manufacturing partner with which to pilot RFID technology. But he found no takers.

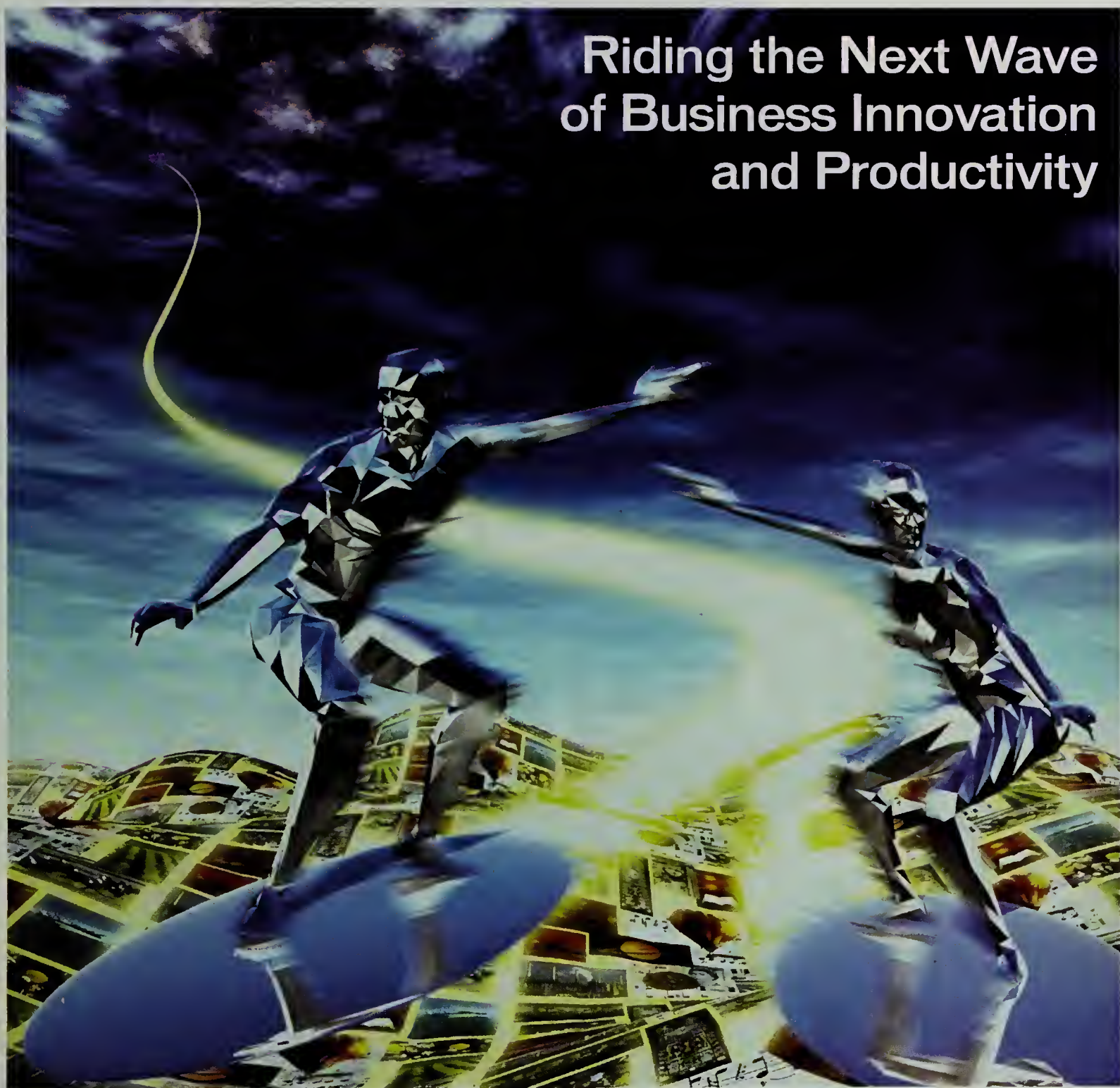
"The reaction was, 'No, we're not going to do this because it costs a lot of money,' and 'We're only doing it because we have to,'" Vick said. "I understand the tags are expensive. But there's a lot of talk here that 'we don't want to do slap and ship. We want to look upstream. We want to find that value.' But people aren't ready to act yet."

**49799**




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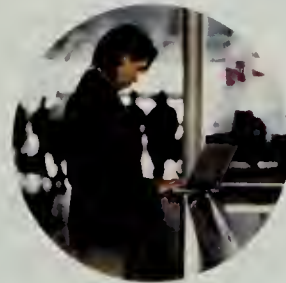


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# Dynamic IT

## Riding the Next Wave of Business Innovation and Productivity

Over the past two decades, \$10 trillion in information technology investment has unleashed a wave of business innovation – in everything from the way companies deal with customers and suppliers to the way they conduct meetings, count paper clips and send correspondence. For years there have been questions over the degree to which IT actually increases business productivity, but since the mid-1990s it's been clear that the contribution is substantial. There are now enough studies to fill a bookcase on the impact of IT on both enterprise and country-level productivity.

Figure I actually shows the correspondence between U.S. productivity growth and IT investment as measured by the U.S. government – with the growth in IT investment shifted by three years on the assumption that it takes some time for the investments to pay off.

As you can see, in almost every instance where IT investment has gone up (or down), productivity growth three years down the line has followed. The data does not prove a cause and effect, but the correspondence is clear. Increased

**By John Gantz, Chief Research Officer, IDC, and Frank Gens, Senior Vice-President, IDC**

IT spending and increased productivity go hand in hand.

Of course, this is a picture of the macrocosm. In the microcosm, we have plenty of other evidence that IT has generated improved corporate performance.

In spring 2004, IDC surveyed 500 CEOs and CIOs on the relationship between IT investment and sales performance. That study found

that companies with high sales performance are also likely to be leaders in IT. Additionally, these businesses tend to increase IT spending faster than the market average, while keeping an eagle eye on costs. Moreover, these sales and technology leaders concentrate their investment in areas that give them more insight into their customers.

Translated to the enterprise environment, this means that companies that increase investment in IT should see an increase in productivity and performance. But this is only



true if they invest in the right technology at the right time; manage their investment and implementation well; and manage their non-IT investment to maximize their IT investment.

And it goes without saying that companies that do increase productivity through IT do not do so in a vacuum. Their peers and competitors will be investing in IT as well. You can't just improve a business process and stop there. Innovation needs to be ongoing.

To sustain this innovation – continually improving business processes while simultaneously engineering out costs – IDC envisions a new generation of information technology that we call “dynamic IT.”

The concept is simple. Dynamic IT is about creating a high-performance IT capability that can support the rapid pace of business change. The dynamic IT framework untangles the patchwork of isolated, under-leveraged infrastructure, data and applications that today are common in many companies. It turns hard-wired point solutions into shared services.

The goal of dynamic IT is not to make an enterprise merely a little more responsive to changing business needs, but rather an order of magnitude more responsive. It's a lofty goal, to be sure, but as we will show, many of the technologies and business practices required to meet it are already here.

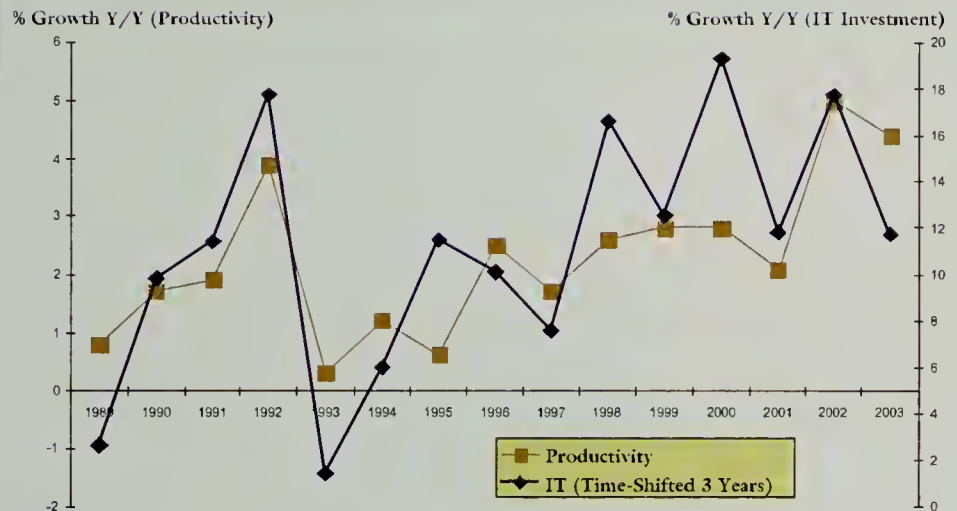
### Why dynamic IT?

In a controversial article published in the May 2003 “Harvard Business Review,” Nicholas Carr argued that IT is now a commodity that no longer offers sustainable competitive advantage. Too many companies have access to the same packaged solutions for any IT-driven advantage to last for long. IT, Carr contends, is like electricity or steel – critical to a company but not a source of differentiation. Business and IT executives

their involvement with IT to increase over the next year (none thought it would decrease), and over 50% say their company should be more aggressive in using IT to attack business problems.

In another survey of large U.S. enterprises, top business and IT executives told IDC the biggest problems they face aren't technological in nature. Rather, the top challenges are related to cutting waste and inefficiency in the company;

**Figure 1. Growth in U.S. productivity follows growth in IT investment**



Source: IDC 2004

have been arguing since the article appeared with Carr's basic premise, but they agree that IT is critical to business (Figure 2).

One sign of the importance of IT is the amount of time line-of-business executives and CEOs spend on IT issues: 20%! This includes planning, evaluating, reviewing and testing. Over 25% of respondents expect

reorganizing to better face the market; and doing a better job of dealing with customers, partners and suppliers.

Can IT help address these business problems? How?

This is where dynamic IT comes in. Even if author Nicholas Carr is wrong, it's clear that the days of long-lasting market stability and



competitive advantage are over (if they ever existed at all). Management priorities are increasingly driven by the need to respond quickly to fast-moving market dynamics. A sharp rise in oil prices. The demise of a key supplier. An acquisition. A new law or court decision. A dock strike. Offshore competitors.

Indeed, the only way to gain sustainable competitive advantage is to continually establish and re-establish temporary competitive advantage.

ment to the shopping patterns found in individual stores. And why do you think Wal-Mart is pushing radio frequency identification (RFID) so heavily? It's all in the quest to keep store shelves stocked at all times.

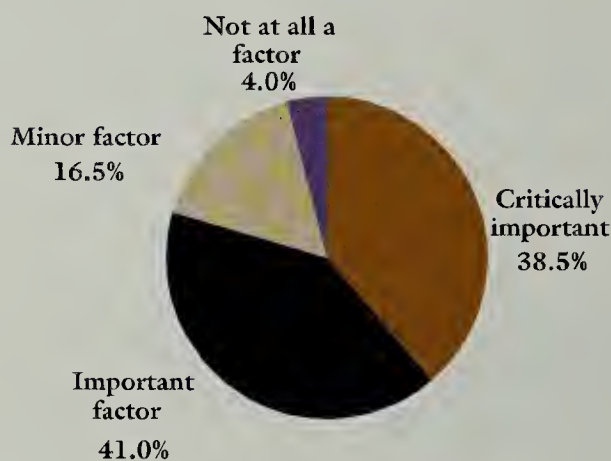
But using IT to support such real-time adjustments to changing business conditions is no easy task. While organizations face growing pressure to become more dynamic, IT has historically responded slowly to business change. In many industries, the

dancy; and improving the adaptability of business operations with a layered, service-oriented IT environment that allows changes to be made in individual parts of a business solution without impacting the rest of the solution.

Adding to the challenge of building dynamic IT is business executives' perception that IT costs are too high and IT asset utilization too low. As a result of this perception, much of the build-out of dynamic IT will have to be self-funded.

**Figure 2. Over 79% of business executives say IT is critical or important**

**How much of a factor is IT operations performance to your business success?**



Source: IDC's LOB Executive Survey, 2004

That's why companies as diverse as 3M and Best Buy are continually searching for IT-borne advantages. 3M has a "2X/3X initiative" intended to double the number of products it creates every year – a task that leans heavily on IT. Best Buy has a "customer-centric stores initiative" that seeks to tailor store replenish-

speed of business cycles outstrips the speed at which IT can react.

Two key goals of replacing the numerous hard-wired connections among dedicated IT resources with many more "virtual" connections among shared resources are improving operational efficiency through resource sharing and reduced redun-

#### The path to dynamic IT

IDC sees the transformation to dynamic IT unfolding on two parallel paths. First, there's business strategy and execution. To respond faster to changing business needs, dynamic IT needs to improve the organization's ability to develop and integrate applications, data and workflow, as well as to monitor business performance and speed operational adjustment to market changes.

The second path is IT operations management and automation. Dynamic IT needs to deliver on higher service-level performance and lower IT infrastructure costs. It must also link, monitor and manage all IT operational elements in the enterprise. The latter imperative includes automating labor-intensive tasks; developing end-to-end management capabilities; reducing hard-wired inflexibility through virtualization; and adopting flexible sourcing and





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The real payoff will come when the transformations down these two paths are intimately linked. The left side of Figure 3 illustrates how dynamic IT delivers value, but the right side shows where the real leverage comes from.

In most enterprises, the two domains (business strategy execution and IT operations and management) have historically been segregated. But for a company to become a truly dynamic enterprise, it's vital that these barriers be breached. Business executives need to understand how IT can be applied to improve their

employed in an orchestrated effort to help create this linkage.

### Hinge technologies

What are the critical building blocks that organizations need to create a dynamic IT capability? IDC has identified 12 specific technologies, six for each major component.

We'll start with the "business strategy automation and execution" component.

**Business monitoring and analytics: measuring business performance to trigger dynamic change.** Think management dashboards, portals, real-time analytics.

Business process-focused solutions using reusable application logic, business rules and workflow are the order of the day – not large, inflexible packaged applications.

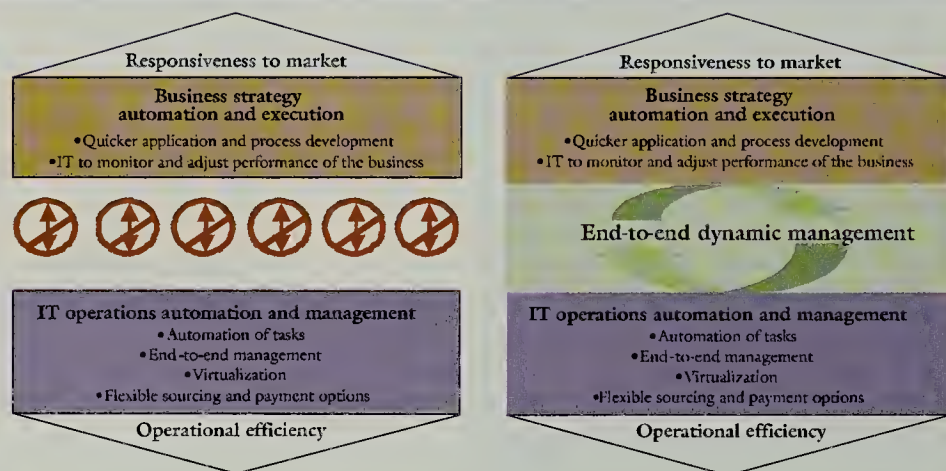
**Information and data services: defining and accessing relevant information as needed.**

Technologies that support integration, transformation and quality of information in a time-sensitive manner are critical. This means advances in modeling and meta-data management; better contextual analysis of data; the combination of structured and unstructured data; advanced search and discovery; and federated data management.

**Integration, event and deployment services: connecting, processing and managing end-to-end messages, events, information and application logic.** This technology supports concurrent, asynchronous and synchronous message streams with contextual and state awareness. Discrete technologies include agents and brokers; application servers for service provisioning; and integration tools that, to take one example, can help companies gain a single view of their customers.

**Collaboration and communication services: supporting human interaction in the business process.** These technologies coordinate resources for interaction, especially those enabling workforce productivity and linking the organization to the outside world. To date, many of

**Figure 3. Dynamic IT delivers value in both the business realm and the IT operational realm. The real payoff comes when the two are interconnected.**



Source: IDC 2004

operations. IT personnel need to have a clear view of the entire IT value chain and how it supports business processes.

These may seem like pie-in-the-sky goals, but there is no doubt that existing technologies can be

Think store reporting systems that automatically trigger supplier shipments of hot selling items.

**Business process management and applications automation: quickly configuring applications and workflow to support the busi-**



these technologies have led to applications that remain isolated from the automated functions of a business. That must change.

**Access and interface services: providing navigation and interactive experience inside and outside the enterprise.** Given the growing complexity and tremendous volume of systems and sources in today's computing environments, navigating and accessing them in the context of role and function has become increasingly difficult. Consolidating sign-on and standardizing procedures is just a first step in addressing the user experience.

Now we'll note technologies supporting the "IT operations management and automation" component.

**Service-level management and automation: triggering deployment of IT resources.** These include the emerging automation or orchestration engines that trigger the provisioning of enterprise systems from virtual resource pools. Automated provisioning is what finally achieves "on-demand" or "utility" IT. This requires the setting of service level agreements and setting priorities for different workloads and services.

**Metering, measurement and chargeback: charging for IT use by business group or activity.** This area is focused on leveraging metering metrics for usage measurement and billing to departments and customers that use a shared resource



pool governed by service-level management and automation.

**Security: protecting the entire IT environment.** Security runs through all layers of dynamic IT and ensures privacy between customers and departments in a shared-resource environment. Its many facets include authorization, access, protection and managing identity throughout and beyond the enterprise.

**Infrastructure virtualization: creating efficient virtual resource pools.** The partitioning of servers is the most commonly used aspect of virtualization today; the practice must be extended and refined so that all enterprise systems can be allocated and reallocated to different workloads depending on service-level agreements and priorities.

**Infrastructure provisioning: enabling rapid and consistent deployment of IT resources with improved change control.** Here are the tools that provision a platform with operating systems, patches, applications and services that allow it to be a resource for a given workload. Provisioning tools may be automated (and therefore controlled) by the service level management and

automation engine; alternatively, they may be more manual, in which case they may help IT managers seeking to deploy patches or upgrades to groups of servers remotely.

**Platform management and monitoring: enabling system monitoring, inventory, alerting, group management and capacity management.** These technologies contribute the individual node and group systems management that lets IT administrators manage the hardware and software elements of storage, server and network equipment.

### **Making dynamic IT happen**

Merely knowing what technologies lead toward dynamic IT doesn't ensure their implementation will go smoothly. But a number of design principles apply.

For one thing, point products or solutions with little connection to other parts of the IT value chain are clearly of limited value. Applications that lack business rules or service level requirements as key design inputs won't make the grade. In turn, service-oriented architectures incorporate layers of abstraction that allow for the rapid changing of IT system behavior – which, in turn, allows for rapid re-architecting applications and solutions.

Dynamic IT is also heavy on modular design, the use of standards when possible and multiple levels of virtualization. Dynamic IT simulta-



neously increases the number of logical connections among IT resources and cuts (or masks) as many physical interdependencies as possible. While virtualization has been available within IT systems for decades, its application is spreading to a much broader range of hardware and software systems.

Finally, dynamic IT comes with a flexible internal/external sourcing model and a flexible operating cost model. One major benefit of dynamic IT is the flexibility it brings to internally source or outsource various components as business conditions require. A flexible cost model that supports usage-based pricing or on-demand access to resources is also a key ingredient.

### Measuring the value

Naturally, enterprises must rigorously track both the cost and contribution of dynamic IT. This can be difficult to envision. How is IT supposed to improve a business process? Faster response time? Around-the-clock coverage? Fewer errors? How will improvement be measured? What did the IT behind that improvement cost?

Because IT investments may support multiple business processes, and because a business process improvement may come from multiple IT investments, matching costs to improvement is a challenge.

We find that getting the most out of dynamic IT requires two linked



measurements:

- IT costs supporting a business function.
- Improvement in that business function.

The linkage must come from detailed monitoring on both sides. This is where the service level architecture and metering and monitoring technologies in dynamic IT come in – dynamic IT helps monitor and report on itself to enable optimal use of IT resources. The same goes for business monitoring and business analytics.

IDC, in its IT Value Metrics and Measurement research practice, closely studies the way leading U.S. and global companies justify, monitor and optimize their IT investments (see sidebar) – but let's face it, there are no silver bullets. The most important requirement is that there

be some ongoing monitoring of improvement and costs.

### The roadmap

Building a dynamic IT capability is a large and complex undertaking. Where should CIOs start the journey? The answer will vary by organization, but in a recent IDC survey of U.S. business executives it was clear that the dynamic IT areas most directly connected to enabling business process improvement (flexible applications; integrated data and information; and improved communication and collaboration) are the most urgent.

On the other hand, dynamic infrastructure investments, largely invisible to business executives, are considered lower priority. This is a big challenge (and opportunity) for CIOs, who must connect the dots between infrastructure investments and business performance.

For CIOs trying to develop and prioritize steps toward a dynamic IT environment, here are some key findings from our research:

- Business executives' priorities will focus on business processes. This seems self-evident, but IT execs must remember that their business counterparts will always see IT through the lens of their own operations.
- There are mixed messages about process visibility. In surveys, real-time monitoring of business ranks low. This may be an anomaly, but it may reflect a growing realiza-



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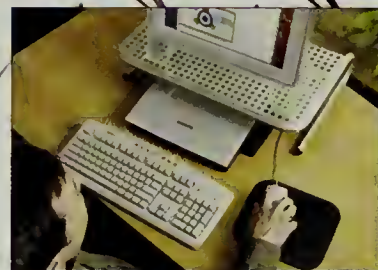
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# Accounting for Dynamic IT Value

A dynamic IT organization is always measuring and monitoring itself. To help businesses do so, IDC's IT Value Metric and Measurement research practice recommends the following:

- Track IT consumption costs to collect data for controlling IT costs and showing IT usage volume/patterns. Businesses should set parameters through joint efforts by business functions (such as finance, engineering and IT); model IT service costs on key metrics that are highly correlated cost drivers; and report cost data in a way that is meaningful to constituents.
- Track IT-enabled business process performance to collect data for directing IT dollars to areas of greatest impact and for maximizing process performance. Companies should focus on what must happen in order for processes to be considered successful (e.g., expected benefits, impacts, outcomes); identify key per-

formance indicators with quantifiable markers of how IT is expected to impact process performance; and ensure the tracking process has an internal logic that takes into account the potential impacts of one part of the process on others.

- Use the data from both initiatives to more closely manage enterprise activities to strategic objectives. For example, enterprises should undertake interventions to improve process performance through adjustments to IT capabilities and services or through process adjustments that improve the way people work with technology and conduct the process itself; focus on net benefits to the organization by comparing cost and usage data to related business process performance data; and plan for future IT-enabled directions more confidently on the basis of data that exposes costs and usage patterns, process outcomes, dependencies and non-IT factors that affect performance.

tion that visibility into processes – analytics and business intelligence – can be useless without the wherewithal to act on what's learned.

- Infrastructure improvements are less urgent to line-of-business executives. IT investments and capabilities are less directly visible to business executives, which creates an internal marketing challenge for CIOs.

- Connecting the dots is critical. CIOs must be able to articulate and measure the business impact and value of planned investments.

- Improving IT capabilities trumps lowering IT costs. In our research, three of the four top-rated priorities involved improving IT capabilities (functionality, speed, flexibility); only one involved lowering costs. Business executives are not so skeptical of IT value that they simply want to squeeze down costs. This is valuable equity that IT must conserve through well-managed projects and high-quality service.

With dynamic IT applied to the process of measuring its own impact, companies can get a jump on creating a succession of temporary advantages that, over the long run, equal sustainable competitive advantage.\*

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# Vendor Group Looks to Win Grid Computing Converts



**BY PATRICK THIBODEAU**  
The Enterprise Grid Alliance was formed six months ago by a group of IT vendors to accelerate the adoption of grid computing technology by corporate users. In addition, the EGA is now developing standards and specifications designed to make it easier for IT managers to deploy products in grid installations. EGA President Donald Deutsch, who is vice president of standards strategy and architecture at Oracle Corp., discussed the alliance's goals during an interview with Computerworld on Sept. 24.

**What business problem is the EGA trying to solve?** The EGA is focused on two classes of applications: commercial applications — the guts of the organization, which includes highly transaction-oriented applications such as ERP,

CRM, general ledger and business intelligence — and a second class of applications, which, for a lack of a better term, we call technical applications. These are the things that might not be as transaction-oriented but are still fundamental to the business, such as portfolio analysis in the financial sector.

**The ability of grid technology to handle technical applications is well known. But in terms of applications like CRM and ERP, what kind of role will grid play?** Grid will play a fundamental role. These companies came together because their products are being applied today to address these sorts of mainline business applications. They recognized it as a business opportunity. They came together with the fundamental purpose of bootstrapping the market.

**So, is this a marketing organization?** That is an interesting question. Clearly, the objective of EGA is to speed up the

time to market for grid technology and grow a market to the mutual benefit of the founding members. Toward that objective, EGA is focused on identifying real or perceived inhibitors to the adoption of grid technology in the enterprise and then addressing those inhibitors in whatever way is required. If this requires the development of specifications and creation of standards, then EGA will do that. If, in fact, one of the inhibitors is really a lack of knowledge in the marketplace or maybe a misunderstanding of the current state of technology, then EGA is positioned to address those through marketing. Is EGA a marketing or standards technology group? My answer is it's 60/40, and I'm not sure which is 60 and which is 40, because it depends on what people identify as the inhibitors.

**There are a number of grid standards ef-**

**orts, such as the Global Grid Forum, under way. Won't your effort create conflicts?** EGA does not want to invent something that we can acquire from another consortium. If there's a solution available from another forum to a problem identified by EGA, we'll work with that forum to adopt their solution. In the absence of such a solution, if there's another forum that is able or better able to create a solution, we'll establish a relationship with that organization to assist them with that.

**There are some big companies missing from your membership list. Can you be successful without IBM and Microsoft, for instance?** We continue to talk with Microsoft and IBM. They or others can decide whether it's an appropriate forum. EGA is a level-playing organization, [a] one-company, one-vote organization. **Q 49752**

## E-voting Lawsuit Can Proceed in Fla., Judges Rule

**BY TODD R. WEISS**

With the presidential election just a month away, a federal appeals court last week ruled that a challenge to the use of some electronic voting machines in Florida can be heard by a U.S. District Court judge there — even though a parallel case is already moving through the state court system.

Judge James Cohn had abstained from hearing the case earlier this year, citing the state-court fight as the basis for his decision. But in its ruling, a three-judge panel at the U.S. Court of Appeals for the Eleventh Circuit in Atlanta ruled that Cohn had erred.

The federal lawsuit, filed in March by Rep. Robert Wexler (D-Fla.) and several co-plaintiffs, alleges that 15 of the state's most populous counties use e-voting machines that don't produce a paper trail of the votes being cast. Machines in 52 other counties do generate paper records that can be used to verify vote totals in case of recounts. The lawsuit claims that by using different types of machines across the state,

Florida has created "a nonuniform, differential standard" that violates the constitutional rights of due process and equal protection.

Wexler and his fellow plaintiffs filed a separate lawsuit in a state court in January. The appeals panel wrote in its ruling that the parallel proceedings "do not present the 'undue interference' in state court proceedings" that Judge Cohn cited in his abstention decision.

In a statement, Wexler applauded the ruling. "I hope that as a result of this federal lawsuit, Florida will adopt the most secure and fair voting procedures possible, so that a means for a recount is available and that every voter will know that their vote is being accurately counted," he said.

Jenny Nash, a spokeswoman for Florida Secretary of State Glenda Hood, called the appeals court decision a procedural step and said the state is confident that its e-voting systems are up to the job at hand. "We continue to have the highest level of confidence in the voting systems being used in Florida," Nash said.

She added that even after being hit by four hurricanes in the past six weeks, the state's counties have successfully held elections using the systems. "We expect no less in the general election," she said. **Q 49753**

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Robert Wescott  
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DON TENNANT

# Sage Advice

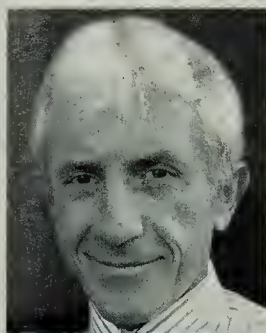
ONE DAY in February 2002, I was standing in Sanjay Kumar's modest office at Computer Associates' headquarters. The then-CEO of CA was recounting a story about his first day of school in the U.S. — it was 1977, and he had emigrated with his

family from Sri Lanka at the age of 14. He said that when he went to the cafeteria for lunch, he found there were two serving lines — one full of black kids, and the other full of white kids. The problem was, he couldn't figure out which line to get in. So he didn't eat. That evening, he told his mom about his dilemma, and he asked her which line he

should choose. His mom gave him the kind of sage advice only a mother can give: "The shorter one."

I don't know why this country just can't seem to get the race thing right. But I do know one thing: Sanjay Kumar is innocent. That's right. He's innocent of every single one of the 10 charges brought against him in a grand jury indictment two weeks ago [QuickLink 49647]. He's innocent of securities fraud and of obstruction of justice. How do I know? Because he pleaded innocent to all of the charges. And he hasn't been tried, let alone found guilty. That means he's innocent. That's the way the system works, remember? That's one thing this country has gotten right.

That's why it strikes me as peculiar that CA has abandoned Kumar the way it has. Not only has the company revoked some of his benefits, but it appears to be going out of its way to distance itself as far from Kumar as it possibly can. And all of this comes less than six months after Mark Barrenechea, CA's executive vice president of product development, defended Kumar's shift from CEO to chief software architect and



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called Kumar a "brilliant, innovative, motivating individual" whose service in his new capacity was "a wonderful thing for customers" [QuickLink 46426].

Regardless of whether Kumar is eventually found to be guilty of wrongdoing, the fact remains that CA owes him a debt of gratitude it will never be able to ade-

quately repay. As many of the CA users we have interviewed throughout this ordeal will attest, Kumar almost single-handedly transformed that company from what was unquestionably the most despised software vendor on the planet to one that routinely receives accolades for its customer-centric focus. There was a merciful end to the user-be-damned

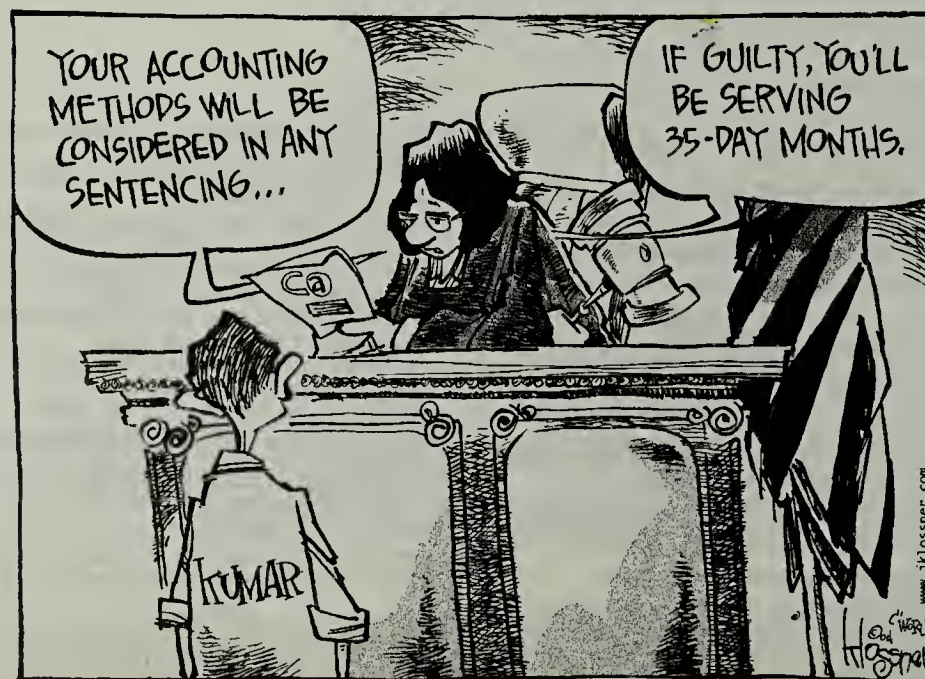
days under the oppressive hand of Charles Wang, when so many of the customers of the software companies acquired by CA were left dangling in the wind with no support or upgrade path for their products. No longer were users demanding, as a condition for doing business with a particular vendor, that they would be paid three times the value of the contract if the vendor was ever acquired by CA. An almost universally feared, widely hated adversary had become a trusted business partner. All under the watch of Sanjay Kumar.

The real tragedy here is that if Kumar is found guilty, that monumental contribution to the betterment of corporate IT will be largely forgotten. I have a hunch that his mom gave him some more sage advice when he was a kid: If you goof up, acknowledge it, make amends, be forgiven, and move on. If you didn't goof up, stand up for yourself.

So if Kumar was thinking of his mom when he said, "Not guilty," I'll believe him. And CA should too.

Q 49761

*Don Tennant*



DAN GILLMOR

# A Patent Strain on Innovation

SOME THINGS ARE patently ridiculous. One is the U.S. patent system, an institution in desperate need of reform.

The reason for patents is to encourage innovation. We give inventors exclusive rights to their creations for a limited period, after which the inventions enter the public domain.

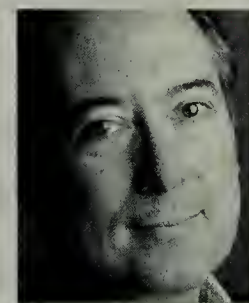
In the real world, patents are also about politics, mismanagement and slippery behavior. The results may be damaging to our economic and cultural health. Patents are supposed to be issued for actual inventions — for new methods and machines that are, crucially, not obvious. Too many patents are being awarded for "inventions" that aren't new or are blatantly obvious.

The technology business is rife with bad patents. A couple of years ago, BT Group claimed to own a patent on hyperlinking, a concept that long predated the company's application. This bizarre notion was, thankfully, shot down in a U.S. courtroom, but not before SBC Communications spent a lot of money defending its right to use the technology.

Microsoft lost a trial in which a small Illinois company, Eolas Technologies, claimed to own fundamental technology for browser plug-ins. The U.S. Patent & Trademark Office (PTO) is re-examining that case, which many in the Web community believe is an example of a patent that should never have been issued in the first place.

Then there are the "business method" patents — essentially, online translations of analog activities. The most infamous is Amazon.com's "one-click" shopping patent, but there are lots of other egregious examples.

There's plenty of blame to go around on this. But the chief culprits are the



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PTO, which by nearly every credible account doesn't sufficiently analyze the applications it gets, and Congress, which allows this to persist.

To be fair to the PTO, it is laboring under handicaps. For example, Congress doesn't let the agency use all the money it generates in fees to improve the patent process. But the PTO's attitude has been compared, accurately, to that of a polluter. The agency, which considers patent applicants — not the public — to be its main constituency, hands out patents willy-nilly and lets the courts sort out the mess that results.

IT has a serious stake in this. The intellectual property dust-up over Linux seems likely to be the tip of a nasty iceberg, with patent holders (especially Microsoft, I suspect) potentially using threats about alleged infringement to scare people away from open-source software. And companies developing their products are increasingly filing for patents on everything that moves, mostly for defensive reasons. Wouldn't you rather see high-tech firms hiring engineers instead of lawyers? I would.

The Electronic Frontier Foundation, working with universities and other organizations, has launched the Patent Busting Project ([www.eff.org/patent](http://www.eff.org/patent)), aimed at persuading the PTO to invalidate some of the worst patents. IT should support this in the short term, and it should lobby for serious reform of the overall system. Innovation needs everyone's help. **49600**

## MICHAEL H. HUGOS

# In Real-Time Enterprises, Keep It Simple

**M**ORE AND MORE, I see references to the "real-time enterprise" or the "agile, sense-and-respond enterprise." It might sound like just another IT fad, but I think it's actually something big. It's where IT can really show its value to business.

So, what is the real-time enterprise? At its core, it means continually improving key business processes and adapting them to constant change. This way, we can deliver better value to customers and more profit to the company.

In other words, the real-time enterprise is not so much about any specific technology or system as it is about how people use technology to continually deliver business improvements and adapt to change.

I find that the most effective way to employ real-time technology is to automate routine transactions and empower people to deal with all the exceptions. In my company, I'm keeping the automated systems relatively simple. They handle only the 70% to 90% of business transactions that are standard and well defined. I don't try to have automated systems handle everything. Unnecessary cost and complexity are avoided by keeping systems simple. And keeping systems as simple as possible also reduces the high failure rate that plagues IT projects.

"But wait!" you say. "The world is a complex place. How will simple systems help me deal with it?" The answer, my friend, is that computer systems are better at handling the simple, rote, routine work, and people (not



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computers) are better at handling the complexity. I don't need lots of fancy artificial intelligence (and complexity and expense) in my systems if I use the natural intelligence of people instead.

I define complexity as any transaction that's an exception to the standard business rules built into my automated systems. When exceptions occur, the automated systems just flag them, trap the related data and send alerts to the appropriate people to examine this data. The systems then return to handling the vast majority of routine

business transactions.

There is a lot of power in handling complexity this way. An exception to a standard set of rules will either be because of an error in the data or because the data reflects something out of the routine. The people who are alerted will decide whether the non-standard data is the result of an input or process error or if it indicates something new in the environment. Either way, it's best to have people, not com-

plicated and hard-to-understand computer systems, making these decisions.

If the data or the business process shows an error, people do root-cause analysis (like Six Sigma) and fix errors at the source. This makes the standard business processes even more efficient, and value is gained from that. If the data shows a new development, then early detection allows more time to create business processes to respond effectively. Big wins can come from this.

I've begun deploying real-time systems like this in my own company. The systems are relatively cheap and quick to build, since they're designed to handle only the standard, routine transactions. And people now have time to do more valuable work. They aren't worn down doing the boring, routine stuff, and they have time to focus on the exceptions, learn from experience and find ways to increase their efficiency. A process of continuous improvement is starting to take hold.

Could it be this simple? Am I missing something? I'll keep you posted.

**48853**

## WANT OUR OPINION?

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## READERS' LETTERS

### Electronic Voting Is More Efficient in India

**A**S AN INDIAN, I was mildly amused by the article "Effort Afoot to Address E-voting at Convention" [QuickLink 48368].

As you may be aware, India has just had an election in which all votes were cast using electronic voting machines (EVM).

The election was hailed by everyone as being free and fair, and voting went off smoothly, with hardly a glitch in the equipment. The effectiveness and efficiency of EVMs was clearly apparent, since the results could be announced much faster and administration was also easier.

Reading this story made me realize that:

- The electorate (generally considered to be illiterate) adapted to the new technology extremely well.
- Indian political parties demonstrated a high level of maturity, since there were no questions raised about e-voting as such.
- The Election Commission and administrative machinery (generally

thought to be inefficient and corrupt) carried out the exercise flawlessly and took the new technology in stride.

I would have thought that the U.S., with its smaller and more educated electorate, better technological penetration and a cleaner political system, should find it easier to handle e-voting.

But the debate going on makes me sense one more offshoring opportunity for Indian IT!

**Hemant Mainkar**  
Saud Bahwan Group,  
Muscat, Oman,  
[hemantmainkar@yahoo.com](mailto:hemantmainkar@yahoo.com)

### Weighing Freedom Against Security

**I**HAVE FOUND a U.S. government Web site aimed at emergency response teams that freely distributes a software package that could help terrorists calculate wind dispersion in a chemical or biological weapons

attack ["Online Data a Gold Mine for Terrorists," QuickLink 48662].

**S.W. Bradley**  
Dayton, Ohio

### SO WHAT DO YOU PROPOSE?

That the feds clamp down on information even more? Haven't we lost enough freedom as a society already?

**Jose R. Pardinis**  
Miami

### Review the RFP During Negotiations

**I**T IS AN EXCELLENT suggestion to review the RFP while negotiating a contract to make sure that all topics that reflect performance and milestones are discussed again, since the vendor now has significantly more information than it did when it wrote the RFP response ["Attorney Says Sloppy IT Deals All Too Common," QuickLink 48923].

Information that is revealed during the negotiations can materially change the answers that vendors

made earlier in the process, and the sooner that these discrepancies are identified and discussed, the better the relationship will be in the long term. Not every RFP has this problem, but many of the complex implementations that we see in IT asset management suffer from this problem.

**Jenny Schuchert**  
Vice president of program development, International Association of IT Asset Managers, Pittsburgh,  
[JSchuchert@iaitam.org](mailto:JSchuchert@iaitam.org)

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## Automating the 40 Monkeys

Companies are increasingly using software tools instead of human users to test applications before they are deployed in actual business situations. **Page 24**

## QUICKSTUDY Topic Maps

This is a way to represent knowledge structures and their relationships to information resources. Based on XML, topic maps are related in concept to, but more powerful than a book index. **Page 26**

## OPINION

### The Coming Battle of the Titans

Paul A. Strassmann says Google is using a whole new rule book to take on Microsoft in the battle to be the dominant company in the IT industry. **Page 30**

**D**IRECTOR PETER JACKSON'S *Lord of the Rings* films end with an epic battle on-screen. Behind the scenes, however, another struggle was under way. As each movie in the trilogy went into production, visual effects studio Weta Digital Ltd. scrambled to add the processing power needed to render an increasing number of computationally intensive special effects shots.

By the end of the three-part project, the Wellington, New Zealand-based company had built a massive, 3,200-processor 3-D rendering server farm to cope with the load. The installation is ranked on the Top500 supercomputer list as one of the world's largest supercomputer sites. With some 2,400 of those processors residing on blade servers (and the remainder on 1U, or 1.75-in.-high, servers), it's also one of the most compact.

Weta and other visual effects studios are rapidly turning to large clusters of blade servers, often running Linux, as they balance the need for more processing power with the desire to minimize costs and maximize the use of valuable floor space.

Special effects are playing an increasingly large role in movies because audiences want them, says Greg Butler, digital computer graphics supervisor at Weta. "Film audiences expect visual effects to keep blowing them away. The only way this is possible is through the constant upgrading of our infrastructure," he says.

With the *Lord of the Rings* trilogy, the number of visual effects shots started at 540 in the first film and roughly doubled for each of the next two movies. Industrial Light and Magic (ILM) in San Rafael, Calif., faces similar pressures. "In the first *Jurassic Park* movie, we did 75 shots. Now, with a *Star Wars* movie, every shot has some effect in it," for a total of 2,000 to 2,500 shots per film, says Chief Technology Officer Cliff Plumer.

The processing power required to render even a few shots is significant, says George Johnsen, chief animation and technical officer at Threshold Digital Research Lab in Santa Mon-

# BLADES, CAMERA,

# Action!



As the demand for special effects in movies soars, studios are turning to massive blade server farms to render the images.

**By Robert L. Mitchell**



ica, Calif. "In the visual effects business, there's no end to how many computers you can use," he says. A single shot can range from a few seconds to several minutes. Each second of film includes 24 frames, each containing up to 4,996-by-3,112 pixels in 32- or 64-bit color. Separate passes must be made for each object that requires rendering in the frame and for attributes such as texture, lighting and reflections.

"In the [upcoming] movie *Foodfight!*, there is a scene with 13,000 extras, and they all have animation cycles," says Johnsen. And artists often repeat the rendering process to improve quality.

As many as 150 passes may be required — a frame can be processed on only one CPU at a time and takes 48 to 72 hours to complete, he says. Threshold Digital already has 512 processors in its render farm and plans to double that using IBM eServer BladeCenters equipped with dual-processor HS20 server blades in the next three months.

The move to blades has been swift. Like many other studios, ILM was using stand-alone workstations from Silicon Graphics Inc. to render images three years ago. Today, it has a 2,000-processor render farm, affectionately named Death Star, and half of the processors in it reside on blade servers from Boston-based Angstrom Microsystems Inc. The blades are "taking over quickly," Plumer says. At night, all of ILM's desktop computers are added to the render farm as well. "Our processes are working 24 hours a day, seven days a week," he says.

As is the case in other industries, the studios are demanding more from IT while budgeting less. "Budgets aren't what they were. [Blades] allow us to be more efficient," says Johnsen.

Server blades are also more efficient to deploy and manage. "We can get a system in-house and online within two days, where historically it would take us about a week to build a rack of processors," says ILM's Plumer.

While working on *The Two Towers*, the second movie based on J.R.R. Tolkien's *Lord of the Rings* novels, Weta suddenly found that it needed more horsepower. "We put in 500 processors in about three weeks, including building a new machine room," says CTO Milton Ngan. Weta uses BladeCenters running dual-processor HS20 server blades. The server racks, fully loaded, hold 84 blades, or 168 processors — a significant improvement over the density of Weta's IU servers.

## RENDERING ON DEMAND

**FOR THRESHOLD DIGITAL** and other visual effects studios, the demand for processing cycles has peaks and valleys that follow film production schedules. "Toward the end of a project, we need more power," says chief animation and technical officer George Johnsen.

Rather than adding blade servers, however, Threshold recently began experimenting with the idea of renting processor cycles as

needed from IBM's Deep Computing Capacity on Demand center in Poughkeepsie, N.Y. "On-demand is a cool thing, especially for a cyclical business like ours," Johnsen says.

Under the arrangement, IBM dedicates a group of preconfigured blade servers to Threshold, which accesses them by way of a virtual private network connection through the Internet. "We have a dedicated gateway and a core group of processors," he says. "If we need more, we ask for more." IBM then configures additional blades to the studio's specifications on the fly and brings them online as needed. "It gives me access to a

tremendous amount of power and a resource that I can schedule differently," Johnsen says.

With Threshold Digital's workload expected to grow 25% this year, Johnsen still plans to add more blade servers to the rendering farm, doubling the number of processors to 1,024. But with a server room measuring just 15 by 20 feet, space is at a premium. Outsourcing of processor cycles could solve that problem. "If the strategy works with the on-demand center, I won't need a bigger room," he says.

— Robert L. Mitchell

Management is also more automated. "With previous systems, we'd have to physically go to each machine," Ngan says. The management software for IBM's BladeCenter, IBM Director, lets Weta use scripting to remotely configure blades, update BIOSs and other firmware, and reboot or turn individual blades on or off over the network.

## Powering Up

The increased processor power and density of blade server farms has yielded significant benefits, but it has also presented some unexpected challenges. "We packed [the blades] in pretty tight, then ran into power and cooling issues," says Plumer. Individual blades use less power — for example, IBM says its HS20s are 57% more efficient than its IU servers — but the blades are packed in much more densely, pushing power within each fully populated rack as high as 15 kilowatts for the BladeCenter and even more for some other blade server designs.

At ILM, more reliable blades, more efficient rack designs and the ability to spread out the blades to better balance the heat load in the room seems to have solved the problem, Plumer says.

Weta has dealt with hot spots, but more improvements are needed, Ngan says. One small room containing 1,000

processors has a concrete floor and a low ceiling that ruled out having a raised floor. Weta sealed the racks to improve airflow, installed three air conditioning units and piped air into the fronts of the racks to cool the blades. The blades no longer overheat, but the air temperature at the top of the rack is just under 85 degrees (75 degrees is the recommended maximum). "We are building a new machine room that will be better equipped to deal with blades," Ngan says.

Threshold Digital has a rack that uses IBM's Calibrated Vectors Cooling design to optimize airflow. Johnsen also installed an air conditioning unit that injects air into the top of each rack and exhausts it out the bottom.

"We've had to do some very serious air conditioning to fill the racks up. Instead of feeding the room, we're feeding the racks," he says. "We're dumping five tons [60,000 BTUs] of AC into the racks." The power requirements surprised Johnsen, but "because we have four times the density of processors, that was a fair trade-off," he says.

## Ripple Effect

The concentration of power created by migrating to blade server farms has also had ripple effects on the rest of the studios' IT infrastructures, which were designed to accommodate graphics workstations. "The faster processors have put a strain on our storage systems, which put a strain on the backup systems, which put a strain on our network," says Plumer. "On an average day, we push 75TB of data across our network." ILM's new data center, due to open next year, will include a 10 Giga-bit backbone. Weta has already moved to 10 Gigabit Ethernet.

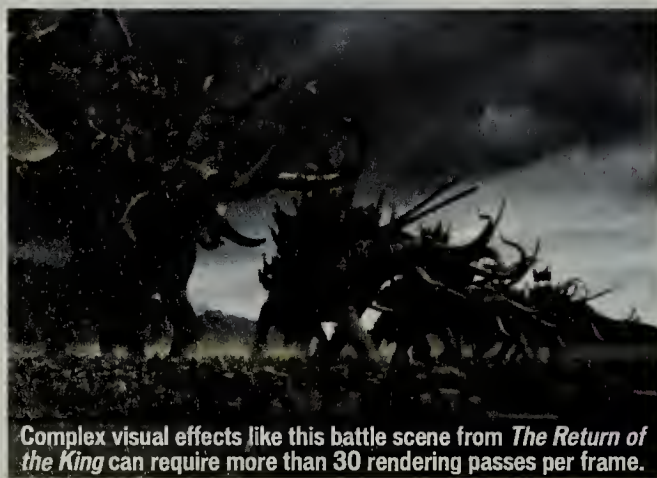
As for storage, Weta has more than 60TB of network-attached

storage (NAS) on 1,100 disk drives under the control of 17 filers. But processing many similar frames in parallel created bottlenecks. "When you have a couple of hundred processors wanting the same data, a single file server can't handle that," says Ngan. Weta spreads the files across multiple filers and developed a "virtualized global file system" to improve performance.

Threshold moved to a Fibre Channel storage network and IBM's General Parallel File System, a high-performance cluster file system that supports concurrent file access. ILM is using a combination of NAS and storage-area network devices as well as near-line storage to deal with the large volumes of data that move on and off the network with each project. A single shot can require a terabyte of storage, Plumer says, up from a few hundred megabytes a few years ago, while the work on a single film may generate in excess of a petabyte of data.

All three studios are looking for ways to get even more out of render farms. ILM plans to double the size of its data center to more than 12,000 square feet next year. As Weta begins production on a remake of *King Kong*, Ngan says he is contemplating phasing in blades that use Advanced Micro Devices Inc.'s 64-bit Opteron chips or Intel Corp.'s Extended Memory 64 Technology. He expects the larger memory space afforded by the 64-bit CPUs to speed processing times.

Threshold's Johnsen says the ultimate goal is to break the cycle of using one processor to render each frame. "This is why we are desperately developing multithread and relational grid strategies for our rendering," he says. Johnsen sees blades as a key part of the company's 10-year plan. "The natural progression is to some form of 3-D grid computing... and blades are the next logical step," he says. **49526**



Complex visual effects like this battle scene from *The Return of the King* can require more than 30 rendering passes per frame.

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**S**OME CALL IT "THE 40 MONKEYS TEST." Others prefer the more diplomatic "Friday night pizza party." Whatever the name, it's the traditional method for predeployment software testing: coercing a few dozen employees to come in after hours and beta-test an application to uncover bugs and performance problems before it's rolled out to customers and employees.

Unfortunately, it doesn't always work. "You ask a guy to run a hundred tests, he's eventually going to miss something," says Arthur Povlot, business development manager at Tescom Software Systems Testing Ltd. in London.

It's also virtually unrepeatable. "If 50 people find problems, which I fix and then want to do another test... well, it just isn't easy to get everyone back again," says Dave Wollin, managing group director of IT at AXA Financial Inc. The New York-based finance and insurance company used Mercury Interactive Corp.'s testing tool before deploying a Web application to field agents.

The desire for repeatability and accuracy is one reason organizations are moving to automate testing, both to uncover bugs and ensure that they meet performance standards.

Melissa Webster, research director at IDC in Framingham, Mass., says worldwide sales of automated testing tools rose by 8.5% in 2003 and are expected to grow at an annual compound rate of 9.3% through 2007. "This sector has recovered faster than the overall IT market," she says.

The increasingly integrated nature of IT systems is another factor pushing companies toward automated testing. Human testers can't always accurately recreate the flow of transactions between applications. That's why Varian Medical Systems Inc., a Palo Alto, Calif.-based maker of medical devices, opted to purchase an automated functional testing tool, SilkTest, from Segue Software Inc. last year.

"Our applications pass data like treatment and patient information, so there is a real-time flow between them. We could only test the whole system effectively with automation," explains Ashish Katrekar, quality assurance manager at Varian.

Also, manual testing added as much as six months to Varian's development cycle, seriously lengthening the time to market for its products. "Our test suites had grown so big that we couldn't run them quickly. We needed automation to achieve a quicker turnover of products," says Katrekar.

# AUTOMATING THE 40 Monkeys

Increasingly, companies are turning to software tools for predeployment application testing. By Sue Hildreth

Vendors such as Mercury, Segue Software, Compuware Corp., IBM's Rational unit, RadView Software Ltd. and Empirix Inc. offer products for testing client/server and Web-based applications, as well as mainframe and other legacy systems. Most of these products provide an interface for programming test scripts, as well as a capture-replay tool or visual scripting option for nontechnical users. Also included are reporting tools, and many vendors are starting to offer diagnostics capabilities, as well as monitoring tools for tracking application performance after deployment.

## When to Automate

Of course, manual testing still has value, particularly in functional testing, where it's useful to have an actual user try out an application. "If you are using an automated test tool and your testers don't lay a hand on the system, your users will be turning up bugs you had no idea were there — because you never thought to test for them," observes James Lyndsay, principal consultant at Workroom Productions, a software testing and development company in London.

Human testers may also be appropriate for tests that won't be repeated. Automated tools take time to set up and learn, so one-time tests are often done faster manually. But for repeated use, automation is usually quicker and more accurate.

For instance, NASA uses Empirix's e-Test Suite and FarSite testing service for regression and performance testing on its Web-based grant management application. "There are always new rules and requirements, so this is not an application that we'll finish and never touch again," explains Idriss Mekrez, senior software quality architect for NASA's Peer Review Services. "Automated testing allows us to define the basic functionality the system needs to deliver and test those processes automatically."

For mission-critical applications, automated testing is usually well worth the effort, given the consequences of failure. "The applications that most need testing are those with the biggest impact on the business," says Dan Koloski, product manager at Empirix. "If an application is customer-facing and revenue-generating, it is ripe for substantial testing."

While functional testing tools typically cost \$5,000

RICHARD BERGE





to \$10,000, performance tools can cost \$50,000 to \$200,000. Renting a performance tool is less expensive — around \$10,000 to \$20,000 for a couple of weeks, according to Povlot. Some tool vendors rent their products, as do testing consultants.

There are also open-source tools available. “They’re not as polished as commercial tools, and you have to be a programmer to use them,” says Elisabeth Hendrickson, president of Quality Tree Software Inc., a testing consultancy in Pleasanton, Calif. “But anyone doing testing ought to know how to code anyway.”

Open-source tools aren’t as mature as commercial products, warns Danny Faught, owner of Tejas Software Consulting in Fort Worth, Texas. However, he says, “if somebody has programming expertise, they should definitely consider open-source. If it’s going to save you \$100,000 or more, it’s worth a little work upfront.”

## Choosing a Tool

Regardless of whether you rent or buy, here are three key factors on which to evaluate any tool:

■ **Protocol support.** Not all tools support every platform or protocol. Some support a range of protocols but charge extra for each one. As Povlot explains, “Most [of the tools] handle basic Web applications, but the selection narrows when you look at the different operating systems, databases and interfaces that are included.”

That was a deciding factor for Time Warner Inc. when it evaluated performance testing tools in early 2003. “With most of the tools, if you wanted to test under SSL, ODBC and Oracle, you have to buy those components separately,” says Robert Caruso, senior business systems analyst at Time Warner in New York. The company decided on Compuware’s QA-Center Performance Edition, which bundled all of the required protocols into its basic suite.

Protocol support was also a consideration for Apollo Group Inc., parent company of Phoenix University. “We were testing EJBs, RMI [Java’s Remote Method Invocation], Oracle, PeopleSoft, [BEA Systems’] Tuxedo transaction monitor, and Web applications,” says David Pinkus, senior director of software at Apollo Group. Pinkus opted to go with Mercury’s tool and pay extra for the protocols be-

cause he felt “they had a richer history with more diverse protocols.”

■ **Maintainability.** The ability to easily update scripts when the tested application’s user interface changes is a concern. “Maintainability is a huge issue,” says Hendrickson. “What the high-end tools do is provide a GUI map, or test frame, which is an abstract layer between fields [on the interface] and the test script, so that if the name of a field is changed, then you only have to make that change in one place and all of the scripts will work. They centralize the references to the user interface in one place.”

Componetization of scripts also helps. If one part of a script, such as the log-on process, changes, only the component dealing with that process needs updating, not the entire script. Mercury says that in its products, that’s part of the “business process testing” feature for creating application workflows by assembling the process components. It also enables nontechnical managers to change a test case or create a new one.

“When a business process changes, the business analyst knows immediately, whereas a QA engineer may not.

Now the analyst can just create a new test case,” says Rajesh Radhakrishnan, senior director of product marketing at Mercury.

■ **Compatibility with your application.** Just because the software supports your protocols, that doesn’t guarantee it will work with the software you need to test. Hendrickson recommends bringing competing tools in-house for trial tests with your applications. “Often, one tool will talk to a particular application better than another. That’s why I advise a hands-on evaluation,” she says. “Give it a small set of representative tests you plan to run.”

That also allows you see how easy the product is to use. When Time Warner evaluated performance testing tools, it invited vendors to demo products using Time Warner’s applications. “We wanted to see whether we could take it out of the box and get it working,” says Caruso. “We don’t have a dedicated QA staff, so we needed something our developers could bolt onto their development process.”

A trial also lets you see if the product lives up to its marketing claims. When the Apollo Group brought two load-testing products in to evaluate, it

## Sales of Software Testing Tools

|      |           |
|------|-----------|
| 2001 | \$995.9M  |
| 2002 | \$928M    |
| 2003 | \$1.007B  |
| 2004 | \$1.084B* |
| 2005 | \$1.172B* |
| 2006 | \$1.3B*   |

\*Projected  
Source: IDC

## MONITORING TOOLS: The Next Step

**PREDEPLOYMENT TESTING** obviously isn’t the last word in ensuring the performance of an application. After deployment, many organizations turn to monitoring tools to keep track of system performance and pinpoint problems faster.

“Five years ago, none of them had monitoring. With the advent of Web applications, people realized they could monitor how they work under real usage,” says Arthur Povlot, business development manager at Tescom Software Systems Testing.

Many companies that sell testing tools also offer monitoring products. Mercury Interactive sells its Diagnostics and Monitoring (formerly Topaz for J2EE), Empirix has its OneSight Web application performance management product and FarSite Web monitoring service, Segue Software has the Silk-Central Performance Manager, and Compuware sells its Vantage products.

“Instead of having to wait for someone to report a problem, we catch it very, very quickly with the monitoring tool,” says Idriss Mekrez, senior software quality architect for NASA’s Peer Review Services, which uses Empirix to monitor its grant management application. “It gathers statistics on the performance of the system,” he says, noting that downtime can have serious repercussions.

AXA Financial uses a monitoring tool, Topaz from Mercury, in addition to testing tools. “It helps us monitor how these applications perform every hour of every day,” says Dave Wollin, managing group director of IT at AXA.

— Sue Hildreth

found that one didn’t have the capabilities that were claimed in the product literature. From the perspective of the Apollo Group, the product “just didn’t work,” says Pinkus, noting that his company went with the higher-priced Mercury product. “At the end of the day, if it doesn’t work, who cares if it’s cheaper, or even if it’s free.” **49548**

Hildreth is a Waltham, Mass.-based freelance journalist. She can be reached at [Sue.Hildreth@comcast.net](mailto:Sue.Hildreth@comcast.net).





# Topic Maps

## DEFINITION

**Topic maps** are a way to represent knowledge structures and their relationships to information resources. Based on XML, topic maps are related in concept to but more powerful and inclusive than book indexes.

BY RUSSELL KAY

**C**OMPUTERS have so overloaded us with data, it's become increasingly difficult to find the information we seek. Beginning in the 1990s, powerful search engines like Yahoo, AltaVista and Google made the Web an incomparably valuable information resource, but the growth of available information has rendered even those remarkable tools far less useful. Google currently indexes more than 4 billion pages, and queries often return tens of thousands of pages, but they are arranged in no discernable order.

One promising approach, still in its infancy, is called topic mapping.

Consider the traditional nonfiction book. The care with which its index is created can make the difference between it functioning as a reference work or being a nearly useless compilation of facts. A good index shows what topics are covered, where to find them and how they are organized; offers subcategories and cross-references; and provides pointers to related topics.

But even the best such indexes have limitations. Each covers just one work, and books' very nature restricts the types of information an index can reference. If we want to encompass more than the ideas in a single book — say, a company's accumulated store

of documents and its knowledge base — we need to include more than words on paper. We can find pieces of this knowledge in e-mail messages and headers, individual calendars and schedules, spreadsheets, and structured and unstructured documents in a variety of formats. It can also be found in databases and data warehouses of various types; libraries of images, including audio and video; and data

and business rules contained inside application programs and data files. And we must always be aware of security and privacy concerns — who can access what information? Where do we begin?

In contrast, a topic map is a kind of data structure, just as an outline or a set of categories is. In practice, topic maps were

standardized by the International Standards Organization in 2000 (ISO/IEC 13250) as XML Topic Maps, or XTM. XTM provides a basic model using XML tags to represent the structure of information resources, concepts and the relationships between them.

## How It Works

Let's start with a subject, a real-world entity or an idea that we're representing in our map by topic. A subject can be almost anything, from an abstract concept to a specific document section, and the terms *subject* and *topic* are often used interchangeably.

The topic map model lets us attach three elements (called characteristics) to any given topic: its names, its associations with other topics and its occurrences (also called resources).

Names are mainly useful to people in dealing with topics, and a topic doesn't actually need a name: A typical cross-reference (e.g., "see page 12") points to an unnamed topic. Also, we typically group topics according to some notion of type.

For example, if we're mapping an IT installation, we likely have topics for specific pieces of equipment, home-grown and purchased applications, data storage information and the like. Thus, our map would also include categorical topics such as hardware, software and data structures.

Associations are the conceptual heart of topic maps, indicating how one topic relates to another. For example, Book A (a topic) is written by (association) Author B (another topic).

Occurrences are the actual references — pointers to relevant information resources. Occurrences could include articles, books, images, audio and video segments, application code routines or even people. Typically, we refer to occurrences with uniform resource identifiers (URI), an Internet Engineering Task Force standard for addressing and referencing resources. Web address URLs are a type of URI.

These characteristics of topics aren't universal. They exist within a limited context (called scope), where they are regarded as valid.

The final concept is identity. Ideally, there should be one topic for each subject, and vice versa. In practice, multiple topics can represent a single subject, as when different topic maps are merged. And in a single topic map, we might find "William F. Bonney" and "Billy the Kid" as separate topic names referring to the same subject, a historical person.

But the topic name "Billy the Kid" might also refer to the ballet about the outlaw's life for which Aaron Copland composed the music. To get around these problems, we can unambiguously define the identity of a subject through resources called

subject indicators.

The promise of topic maps is clear. Charles Goldfarb, one of the creators of Generalized Markup Language, the progenitor of XML and all of today's markup languages, has called topic maps "the GPS of the information universe."

Unfortunately, the idea of topic maps is still well ahead of its time. Tools for creating topic maps do exist, along with some implementations in specific subject areas, but these are primarily oriented toward representing and organizing content, and they don't yet adequately address the task of content creation.

The biggest job in building a topic map lies in defining the set of topics and relationships, finding the relevant occurrences and then examining the data for cross-references, aliases and other helpful tools. While some pieces of this job, as with book indexing, can be automated (especially for structured data), the biggest part still requires a human imagination to sort out.

But in a few more years, as Moore's Law continues to expand our computing capabilities, we may well see topic maps come into their own. An application programming interface specification for topic maps (<http://xml.coverpages.org/ni2004-04-09-a.html>) was released in April, so development in this area is proceeding. For now, topic maps are something to be aware of, even if they're not quite ready for prime time. **49527**

Kay is a Computerworld contributing writer in Worcester, Mass. You can contact him at [russkay@charter.net](mailto:russkay@charter.net).

## HISTORY AND RESOURCES

Go online for a history of topic maps:

**QuickLink 49538**

Also, see our Web site for a listing of more resources about topic maps:

**QuickLink 49659**  
[www.computerworld.com](http://www.computerworld.com)

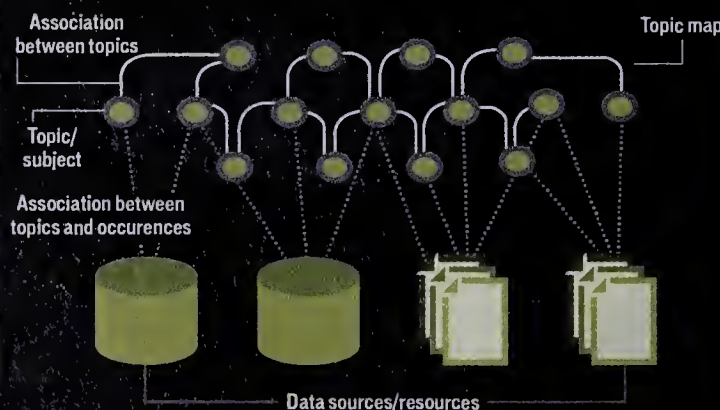
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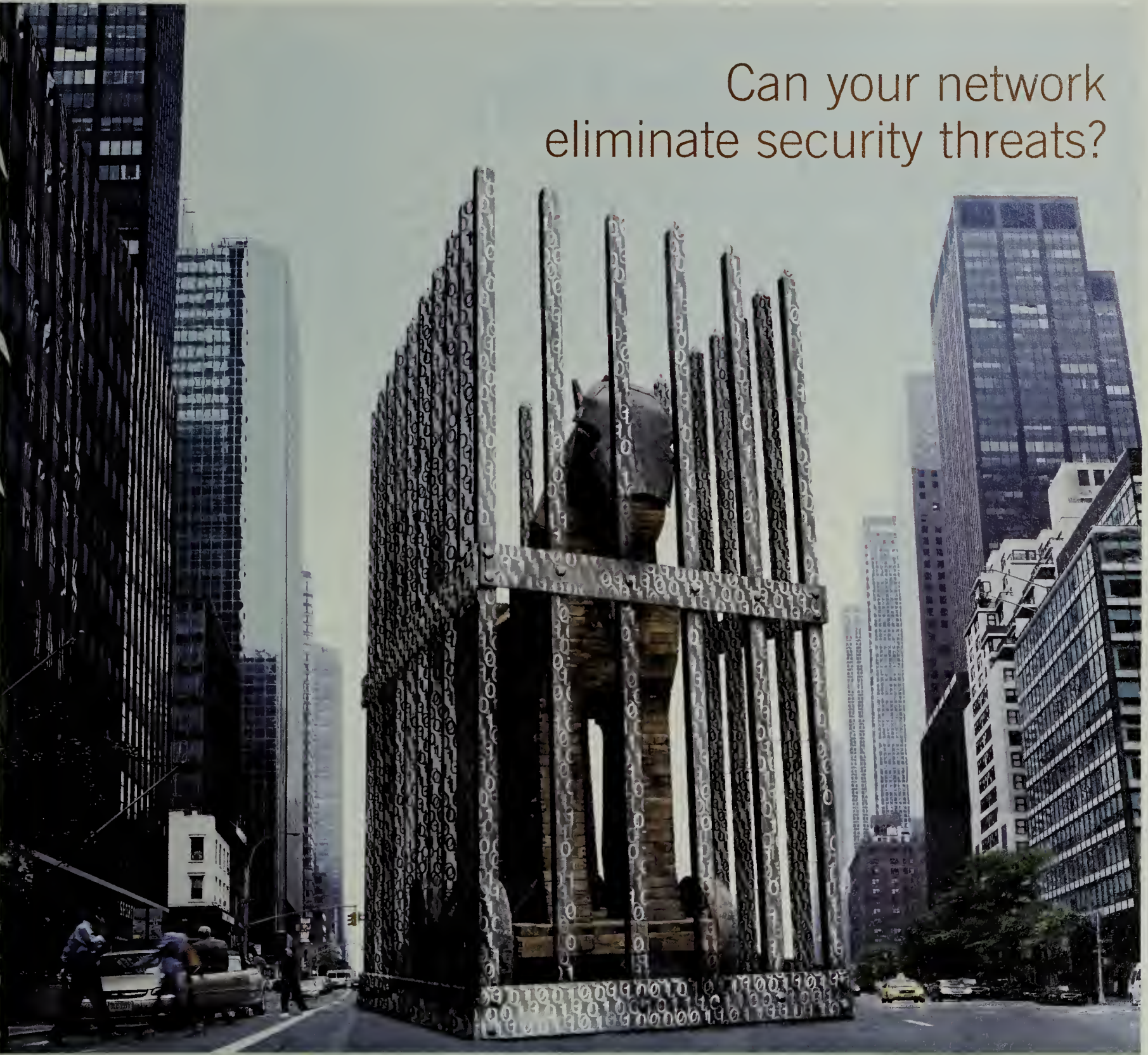
## QUICK STUDY

### Information Navigation

Topic maps represent knowledge structures and describe their associations with information sources, providing a way to negotiate complex information landscapes.







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# Expanding Responsibility For Incident Response

Including other departments in a comprehensive plan can be critical to success — and bog down the process. By Roger Foix

I'VE RECENTLY been working on an IT security incident response plan for a multinational financial services company. A good plan helps you respond calmly, carefully and quickly to a security breach. It covers how a breach is detected and analyzed, how the response work is managed and communicated, and how to learn from the breach and make sure it doesn't happen again.

My main problem with the evolving plan is that the more I think about it, the more people and departments I ask to be involved, which means more input must be included in any response. Even HR is in the picture.

One group that is not yet on the list of parties to call after a security breach — but perhaps should be — is the facilities team. That's because in my favorite security breach ever, it was the facilities team's pest-control skills that fingered the culprit.

I'd arrived at work to hear that \$8 million in unauthorized trades had been executed on the foreign exchange markets at 3 a.m. The terminals that had been used had no access control, since speed is of the essence in that type of transaction. Any access control that slows down a response to a trade could lose us large amounts of money. The trader had failed to log out when he left. The traders know they should log out, but most resolutely ignore this, and they earn far too much money to be easily forced to comply.

We investigated everything: trading system logs, system logs for surrounding PCs, net-

work traffic to those trading systems, cleaning personnel who had been nearby at the time, closed-circuit TV tapes — the works. But nothing helped, until one of the facilities staff noticed mouse droppings on an adjacent desk. The only answer we could come up with was that a mouse had run across the trader's keyboard and pressed the button to accept an \$8 million trade. In the end, the mouse was

duly trapped by the facilities team, christened For-Ex Freddie and kept as a pet.

The worst bit about the investigation was that the \$8 million worth of

trades were backed out that morning by the dealers for a \$4,000 profit, so when we asked the traders to stop this sort of thing from happening again, they just waved the profit figures in our face and laughed. But their terminals did get upgraded soon afterward to a model capable of time-delay log-outs.

Having several departments involved at some level can pay off in the long run, and everything in our security incident response plan is there for a good reason. But now that

we're nearly finished, we have an extremely large document that sets out a great theoretical approach but bears no resemblance whatsoever to how I've successfully dealt with security breaches in the past.

## Adding Complexity

For example, there is the issue of forensics, or gathering and preserving evidence. Forensics is a specialized area, and the more we research, the more we find that needs to be done. Take into account the number of legal jurisdictions this multinational company covers, and you end up with an extremely complicated set of rules to follow during your response work. This adds a massive extra layer of complexity to the response at a time when you want your technical staff to be able to think clearly and quickly. If you try to follow forensics best practices, you slow down your response and potentially expose yourself to more risk. If you don't do it by the book, your data is likely to be of little use if you ever go to court.

Many people address this problem by calling in specialists. You need to call them in early if they're to be of much use, but you need them only if the breach is likely to go to court. I'm having trouble finding people willing to make that decision, since it's a hard call to make early in the process.

Take Clifford Stoll's semi-legendary discovery of a 57-cent discrepancy in his IT accounting records, detailed in his book *The Cuckoo's Egg*. A few cents seem like a very small concern indeed, and most people would never have bothered to investigate. But Stoll did, and he unraveled a tale of international espionage. But had you been in his shoes, when in the process would you have decided to call in the forensic specialists?

## SECURITY MANAGER'S JOURNAL



**We're told that when someone discovers a security breach, they should call HR first and IT security second.**

If you did so when you first discovered the 57-cent discrepancy, you'd get laughed at.

We also have an ongoing issue with the HR department. They want to be involved in every response, right from the beginning. In fact, we're told that when someone discovers a security breach, they should call HR first and IT security second. HR reasons that every security breach involves staff, so their expertise is essential.

At one level I can understand this argument, and in some cases their help is invaluable. I once had to investigate a Swiss employee who was searching for pedophile porn. But because of the strict nature of Swiss employment laws, our investigation was hamstrung. In that case, the HR department stepped in and resolved the situation brilliantly.

But I've also had HR staff looking over my shoulder while we were trying to contain a virus that infected our network six hours before the antivirus companies brought out the antivirus signatures we needed. Most of my team in that incident were dyed-in-the-wool techies, with the stereotypical techie's scathing disregard for the HR staff's rather softer skills. Trying to stop the two camps from fighting took up more time than I could afford. Hopefully we can find a middle ground with HR, but I think that's going to owe more to internal politics and diplomacy than it will to common sense.

Despite these issues, it's worthwhile to include other departments in our incident response plan. Indeed, as I review the processes and procedures we're putting in place, I've been asking myself one question: How would this have helped us deal with Freddie? ▀

## WHAT DO YOU THINK?

This week's journal is written by a real security manager, "Roger Foix," whose name and employer have been disguised for obvious reasons. Contact him at roger.foix@hushmail.com, or join the discussion in our forum: **QuickLink a1590**

To find a complete archive of our Security Manager's Journals, go online to [computerworld.com/secjournal](http://computerworld.com/secjournal)

## SECURITY LOG

### Mail Cruncher Service Debuts

FullScaleCommerce.com Inc. in Jamestown, R.I., has announced Mail Cruncher, an antispam service for businesses that uses a "business trust rating database" to rank and sort e-mail for review by the user. To make reviewing potential spam easier, the service color-codes types of e-mail based on whether previous messages have been sent to the user and whether those messages were accepted or rejected. It also groups messages by domain. The service is priced at \$3 per user per month.

### IronPort Upgrades Security Appliance

IronPort Systems Inc. in San Bruno, Calif., has released a new version of its C-Series e-mail security appliance. The device, which performs anti-virus, antispam, encryption and content-scanning functions, now includes a dashboard interface. It also comes with Email Security Manager, a peer-to-peer management tool that doesn't rely on a central management server. In addition, the appliance features a virus outbreak filter, which blocks infected e-mail messages based on updates from the vendor's database of new virus attacks.

### Smart Door Lock Announced

Lockmaker Assa Abloy AB in Stockholm and cryptographic technology start-up CoreStreet Ltd. in Cambridge, Mass., have announced a new line of door locks that combine physical and logical access. The locks use CoreStreet's KeyFast technology to transmit user access permissions between wired and disconnected doors. The technology will help companies use a single digital credential to secure both logical and physical access. The reader and lock, slated to ship in the first half of next year, will cost about \$1,000.



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## BRIEFS

### Aurema Launches Tool for VMware

Aurema Inc. in Cupertino, Calif., has released a workload management product for VMware Inc.'s virtualization software. Aurema's ARMTech workload management tool helps optimize CPU and memory use. The price is \$595 per CPU for servers and \$59.99 per seat for desktops and workstations. No-cost, 30-day evaluation versions are also available.

### ADIC Upgrades StorNext Software

Advanced Digital Information Corp. in Redmond, Wash., announced a new version of StorNext, policy-based data management software for information life-cycle management. StorNext 2.4 features interoperability with an expanded range of operating environments and storage systems from leading vendors, including Hewlett-Packard Co. and EMC Corp. A four-client system with 10TB of data is \$67,000.

### Cray Unveils XD1 Supercomputer

Seattle-based Cray Inc. has announced the availability of its XD1 supercomputer line, which starts at \$100,000. Cray added the XD1 system to its lineup through the acquisition of OctigaBay last April. It's aimed at the computer-aided engineering market and is capable of running more than 23 precertified commercial CAE applications, the company said.

### Centage Updates Budget Maestro

Centage Corp. in Houston has introduced Version 5.8 of its Budget Maestro business performance management software. It includes a comprehensive library of Crystal Report templates and tighter integration with Microsoft Excel. A single-user desktop edition is \$2,495; the enterprise edition is \$12,995.

PAUL A. STRASSMANN

# The Coming Battle of the Titans

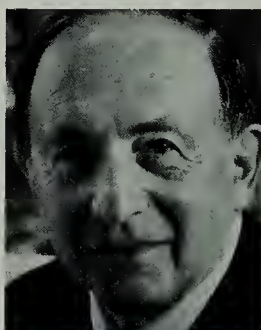
**H**ISTORY TEACHES US that a challenge to a superior power can succeed only by changing the rules under which any confrontation takes place. Head-on attacks on strong, entrenched positions are easily repelled. That's why RCA, Honeywell, Xerox,

GE, Burroughs, Univac, Amdahl and many others failed when they tried to compete with IBM. That's why the computing landscape over the past 15 years has become littered with so many grave-stones of firms overcome by Microsoft.

Now a new Microsoft challenger is emerging on the horizon: Google. What makes Google different is that it follows innovative rules as it carves out a share of the IT business. Google's emerging strategy may give us a clue as to who may be bidding for IT leadership in our uncertain industry by the end of this decade.

Microsoft's power is based on selling customers software that becomes a sequence of increasingly sticky entanglements. Once you've installed Microsoft operating software on a desktop, laptop or cell phone, the steadily increasing inclusiveness of features will raise your costs for choosing any alternative. Google, on the other hand, relies on a generic browser to gain access to a rapidly growing menu of services.

Microsoft's business model is based on mass distribution of software, where economies of scale generate high profit margins. Revenue growth depends on extending software functionality, and the customer pays for each upgrade. Google's business model is based on offering added services based on economies of scale in operations and on innovation. Revenue growth results from extending the economic utility of services that the customer can add at low cost.



PAUL A. STRASSMANN  
(paul@strassmann.com)  
resorts to searches with Google more frequently than with any other application.

Microsoft's superior profits are based on passing on just about all the costs — including those of support labor and capital — to the customer. When you adopt the Microsoft environment, you can't ever budget for the total costs of ownership in the long run. Google is a network services provider. Google owns and operates perhaps the world's largest computer complex, consisting of a rapidly growing population of 100,000 serv-

ers that manage petabytes of data with unprecedented reliability and response time. Google pays for all of its labor and capital out of its pocket. You pay only for what you get.

Microsoft can expand its business by leaving to the customer the job of tending to most of the burdensome tasks of integrity, interoperability, reliability, security and maintainability. These tasks now absorb perhaps as much as 75% of the total cost of user ownership. This overhead baggage is slowing down the implementation of new applications. Google removes the customer overhead altogether by delivering defined services, with a predictable performance.

Microsoft leaves the management of knowledge capital, which is represented by the data and the files spinning on disks, largely in the hands of users. Enterprise knowledge management is now almost entirely dominated by IBM and Oracle (and, arguably, by SAP). Microsoft has recognized that this is the source of its greatest competitive vulnerability. It has now targeted the exten-

sion of its dominance from desktops (where it has a near monopoly) to dominance over servers (where it is behind). This would be achieved by making server and desktop software functionally inseparable.

Google's view is that what matters is not data but the content that clusters of information arrayed with intelligence may convey. Google is committed to extracting meaning (not data) by means of nonproprietary standards from files that may be scattered but are nevertheless accessible.

The transfer of data from paper to computers has characterized the first 50 years of computing. The next era will deal with the transfer of intelligence from computers to people. The proliferation of data and the inability to extract information from it is the problem we must overcome. Consider the inefficiencies in the prevailing practices. My first computer used a 160KB floppy disk to store everything. Now I need two 160GB disks just to keep up. That scales up by a factor of a million, and I see that headed for a billion. Yet everything I put on my computers prior to 1997 has been lost as I migrated hardware and software configurations. At the enterprise level, the losses of institutional memory are even more severe. This sort of memory failure has become a characteristic of all computer-based organizations, as millions of disk drives fill up with redundant, and unretrievable, information stashed away in proprietary formats.

As we evolve toward data-centric architectures (see "Why IT Will Continue to Matter," QuickLink 49169), the management of systems for collaboration and for knowledge sharing will be central to profitable investments in IT. Judging from Google's research and its current marketing probes, it appears to be focused on competing for this opportunity. How Microsoft proposes to address this challenge is yet to be seen. **49697**

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## Think Tank

It's no secret that IT and marketing departments have trouble understanding each other. But Forrester Research says the communication gap can be bridged by putting IT staffers inside the marketing group and having a chief marketing officer who sits at the executive table with the CIO. **Page 37**



## Career Watch

Hacking for the home team; how politics shortchanges federal CIOs; tough times for contractors; plus, the top 10 offshoring companies. **Page 38**

## OPINION

### To Each His Own

There's no IT playbook that works for everybody, and forced uniformity is counterproductive, says Paul Glen. His suggestion: Let IT workers find their own paths to productivity. **Page 39**



Eric Litt of General Motors is one of a small but growing number of chief security officers entrusted with more influence within the company than ever before.

MICHELLE ANDONIAN

Chief information security officers have more influence – and greater challenges – than ever before.

BY JAIKUMAR VIJAYAN

AS THE chief information security officer at General Motors Corp., Eric Litt is in charge of integrating security into every aspect of the company's vast \$186 billion business.

It's a job that has given him a spot at the executive table, support from the board level down and a chance to implement far-reaching decisions related to information security at the company.

"I get plenty of attention, which is a very good thing," Litt says. When it comes to security at the automaker, "resources are not an issue," he says.

Litt is one among a small but growing number of executives who say that heightened concerns are driving a gradual evolution of the security function and investing it with more influence than ever before.

"Security folks have often been viewed as a necessary evil who always get in the way of your doing business," says Howard Schmidt, CISO at eBay Inc. in San Jose and former White House cybersecurity adviser. But regulatory compliance issues and the increasing losses related to worms, viruses and other hacker attacks are making security a part of the

core business process, he says.

Kim Milford agrees. "Security is now viewed as a critical requirement in the purchase, design, development and deployment of applications and services," says Milford, information security manager at the University of Wisconsin-Madison. "There seems to be a shift from the emphasis on predominantly technical controls to risk assessment, policies and user education," she adds.

For instance, Litt has crafted a model under which all security planning at GM starts with an analysis and understanding of the specific threats and risks faced by a business unit. A central security team evaluates and analyzes everything from regulatory requirements to intellec-

# Rise OF THE CISO



# OF THE RiseCISO

tual property protection, inappropriate use, access control and threats such as denial-of-service attacks, worms and viruses.

The group then architects a detailed security implementation requirement for each of the business units based on its specific risk profile. Each of the business units is responsible for implementing the needed technology and process measures and is periodically audited for compliance against its requirements. A color-coded security dashboard for senior management at GM rates the performance of each business unit, with green representing full compliance, yellow showing partial progress and red indicating a total lack of compliance.

It's an evolving holistic approach to security that includes "the people, the organization, governance, process and, lastly, technology," Litt says.

## Strategy, Not Tactics

A similar focus on high-level concerns such as regulatory compliance, digital rights management, intellectual property protection and application coding standards defines the evolution of the security organization at the Bank of Montreal in Toronto.

"Implementing firewalls and hardening systems are not really security issues any longer but operational issues," says Robert Garigue, the bank's CISO. Those are being approached in the same manner that configuration management or capacity management is, he says.

Years of fending off worms, viruses and hacker attacks have allowed Bank of Montreal to implement technologies and automate its responses. The bank is now at a point where it's increasingly offloading those tasks to network and system operations teams.

The security function is no longer just about "exceptions management" and responding to emergencies, Garigue says. The focus instead is "about understanding where the new risks are coming from and not getting blindsided by them," he says.

It's a task that requires security managers to wear several hats, says Christofer Hoff, director of enterprise security services at Western Corporate Federal Credit Union, a San Dimas, Calif.-based company with \$25 billion in assets. It means being a "magician, oracle, facilitator, accountant, psychiatrist, stuntman, public relations consultant and prophet," Hoff says. It requires a background that melds "ditch digging and trench warfare with board presentations and business-based strategy planning," he adds.

Much of the organizational influence that such security managers have begun to garner is tied to the business value delivered by the information security function, Hoff says. There's a growing realization in the corporation that "information security is not about technology [but] about rational risk management," he says.

That shift in perception is resulting in more authority and influence being invested in the security manager or CISO function, University of Wisconsin's Milford says.

An increasing number of CISOs are being asked to participate in crucial business decisions at the highest level, eBay's Schmidt says. For instance, in many cases, the CISO's input and approval is required at the very inception of any large IT project, as companies try to build in security instead of bolting it onto business processes as an afterthought, Schmidt says. "There are many projects that just don't kick off without security guidance in the requirements stage," he says.

Because responding to security risks is beginning to be viewed as a cost of doing business, the security manager is also being consulted more to help assess costs and benefits, Milford says. And security funding is also getting easier to come by, she says, pointing to her own organization's success in securing funds for an array of worm and attack mitigation technologies soon after a wave of malicious attacks last year.

"This shift has, in some cases, moved the security manager function into the highest levels of the IT

## The IT Connection

Over the next few years, the main role of chief information security officers will be to communicate security risks and threats to business managers and infrastructure teams, according to a recent report from Cambridge, Mass.-based **Forrester Research Inc.**

But a failure to keep IT in the security equation could result in operations teams eventually "setting [technology] policy and creating their own [technology] standards," the report says.

Increasingly, security professionals will need to be able to deliver "on-demand, business-driven security services" throughout the enterprise, says **Christofer Hoff**, director of enterprise security services at **Western Corporate Federal Credit Union**.

"The ability to perform proactively and also respond in real time to threats, to measure risk, defend and recover from attacks, and gain a solid foothold on business impact is paramount," he says. "Leveraging technology to simplify and consolidate information into actionable intelligence is critical."

Such a security manager will need to be functionally on par with or even above those in the organization — such as the CIO — who might oppose him, says **Dennis Treece**, director of corporate security at the **Massachusetts Port Authority**.

This will allow the security organization to perform more efficiently while also enabling it to compete better with other functions for money and influence, he says.

"You need a security leader who works for the CEO and who acts as the policy wonk, budget overseer, training overseer and performance overseer," Treece says.

At a very high level, such a manager's role would be to identify root causes of risk for business process owners to fix, says **Robert Garigue**, CISO at **Bank of Montreal**. At the same time, it's also important to preserve the direct responsibility line leaders have for the security of their own business units, he says.

"If you don't keep this link, then they will soon begin to consider security as an increased cost that will not cost them politically if it fails," Treece says.

— Jaikumar Vijayan

organization chart and sometimes even completely outside the realm of IT," Milford says. Although CISOs typically report to CIOs, as companies begin taking more of an operational-risk management approach to IT security, some security managers have been advocating functional parity with the CIO. It's not unusual to find CISOs reporting to chief financial officers and CEOs, Milford says.

## Lagging Behind

But the changes aren't happening at all companies. And corporate inertia and political turf battles continue to make the evolution a painful one, security managers readily acknowledge.

At many companies, the security organization still remains "out of sight and out of mind" unless there is some sort of a cyber emergency, says **Dennis Treece**, director of corporate security at the **Massachusetts Port Authority** in Boston.

"Private-sector managers simply want what they've always wanted from their security program — keeping the company out of trouble and [out of] the papers and doing it for as little money possible," he says.

As one of the executives in charge of securing Boston's Logan International Airport, three seaports and a major toll bridge, Treece is focused primarily on physical infrastructure protection. But he oversees the information security side as well.

"The physical security folks still don't know much about network security, and network people who are given the security mission think of themselves as IT people, not security people," he says.

A divide also exists between network operations teams, which are focused on ensuring optimal performance, and network security teams, which are often viewed as a barrier to that goal, Treece says.

A more powerful security function also raises political issues at a higher level, Treece says. "Anytime there's a new player at the table, others have to move aside and cede a little turf," he says. And the person who stands to lose the most turf in the battle is the CIO, who has traditionally been responsible for security, he says.

The amount of authority the security manager has depends a lot on the organizational culture and structure, Milford says. In top-down, heavily centralized organizations, the authority stems from the CISO's placement within the organization and who he reports to, she explains.

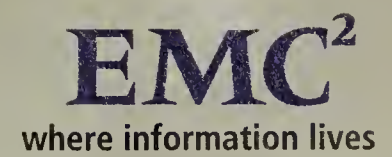
"In less heavily structured organizations, the security manager must gain the trust of the decentralized management and technologists," Milford says.

Companies that have adopted process maturity frameworks such as the Software Engineering Institute's Capability Maturity Model are also more likely to be ready culturally to integrate security into every aspect of their business, Garigue says.

And Hoff says, "It's all about marketing. If you can't demonstrate your worth, long-term survivability is compromised, and the value you offer the organization remains that of a grudge purchase rather than an enabler.

"Our company is enlightened to the value we bring, but only because we go out of our way to relate our successes in business terms" by showing reduction of risk on investment, Hoff says. "To me, it's a simple play." **49496**





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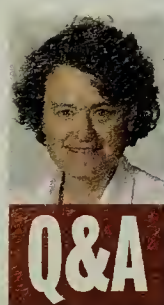
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# Negotiating CHANGE

Aligning your IT investments with your industry's change trajectory may be the key to success.



*"You can't make intelligent investments within your organization unless you understand how your whole industry is changing," writes Anita McGahan in October's Harvard Business Review. McGahan, author of How Industries*

*Evolve: Principles for Achieving and Sustaining Superior Performance (Harvard Business School Press, 2004), bases her theories on more than a decade of research on four trajectories of industry change. She told Kathleen Melymuka how CIOs can align IT investments with those changes.*

**How do I recognize that my industry is undergoing radical change?** Radical change occurs when everything you do is eventually going to become irrelevant because of some new technology or way of doing business. Take overnight letter delivery. When I ask students, they all agree that it will be gone in 100 years. What they differ on is how soon. Another example is land-line telephone. We probably could agree that in 100 years, telephone communication will not occur over copper wire. The question is how long that infrastructure will stay around.

**You say progressive change is the most common type. What does that look like?** Progressive change is occurring in many transportation and retail industries. The challenge during progressive change is understanding that the way to make money is to improve incrementally through careful analysis and reacting to feedback. Unless your strategy is deeply flawed, the Hail Mary attempt to achieve breakthroughs will not work.

**You say creative change is more nuanced. Tell me about that.** Creative change occurs when the underlying resources or architecture or assets in a business are becoming obsolete: legacy systems, old database architectures that don't allow you to connect with customers as you'd like to. Many organizations, such as pharmaceutical and film production companies, are also challenged with threats to their resources. Blockbuster drugs go off patents, and revenue is fundamentally challenged as a result. Or you need a new hit film regularly. You need to constantly renew.

**So some industries by their nature are constantly in creative change?** Yes. The idea is that the assets that lie underneath the revenue structure of the business are constantly being challenged.

**How does that differ from radical change?** Under creative change, the customer is satisfied with how you're dealing with that. The difference between the movie industry and the overnight letter industry is that the movie industry is dealing effectively with renewal of underlying resources, so the customer is not looking for better alternatives.

**That brings us to intermediating change. What's that all about?** Under intermediating change, your customer relationships are threatened but your assets retain value. It's harder to deal with than radical change because you've got to figure out a new way to make money out of assets. If you're running a telephone service provider, you know that the challenge is managing down the land-line infrastructure. But if you're running an organization going through intermediating change — like an auto dealership — you've got a fundamental strategic problem: How do you rede-

ploy assets into new ways of doing business for which you can get paid while ramping down your commitment to an old way of doing business? It's very challenging, because often you're making more money under the old way, and that may continue for many years. That creates civil wars within organizations.

**What does all this mean to me as a CIO?** The IT world is so incredibly complex. There are many, many different trajectories of change within the IT sector. And for CIOs in non-IT companies — the CIO of a bookseller is facing a fundamentally different challenge than the CIO of a telephone company. If you're a CIO, the right way to use this is as part of a broader strategic process in which you envision how your company is going to compete in five years. The right way to manage IT depends on how your organization intends to navigate this change.

**As a CIO whose industry is in radical change, what sorts of IT investments should I consider?** If you're running an overnight letter delivery company confronting radical change, you might want to augment your systems to support account man-

agers in evaluating which customers are willing to work with you in new ways — say, in document management or expanded logistics services — so you can diversify from overnight letter services into related businesses.

**What if I'm a CIO in progressive change?** If you're running a business undergoing progressive change, like Home Depot or Wal-Mart, you should be vigilantly focused on incrementally expanding IT services for efficiency, and strategic IT would deal with managing links to suppliers and customers.

**And if I'm in intermediating change?** The challenge is in finding new ways of transacting business. Developing a system for capturing information about the costs associated with offering products in new ways is going to be central to the future of an organization. If you're an auction house, for example, how do you deal with the stress of online auctions? Well, you have appraisal capability; how will you sell that in a new way? Understanding how much it costs to offer appraisal services to sellers on eBay is an example of how IT could be used to help you deal with intermediating change.

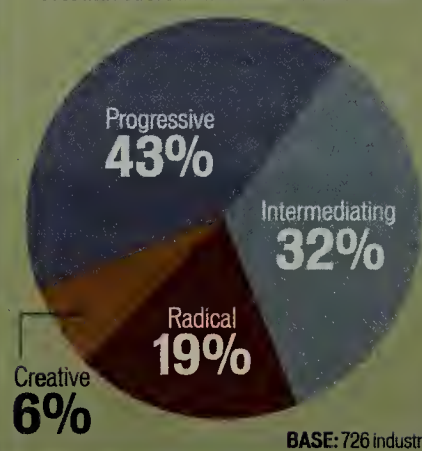
**How does IT play in creative change?** The goal under creative change is to keep these Hail Mary projects isolated. A pharmaceutical company developing a new drug doesn't want to bring down the whole company if the drug fails. The same goes for a movie studio or a company in oil and gas exploration. They need to keep projects isolated. But most leading companies are trying to manage risks across a portfolio of projects. IT is effective if it provides management with information about programmatic success without overcontrolling the individual programs.

**What's the hardest thing about getting all this right?** Each of these trajectories plays out over decades. And even when change carries the potential to blow away old systems and make them obsolete, often in the short run, staying the course generates a higher return on investment. So the hardest part is figuring out how to take these insights about the trajectory of your industry and integrate them into your daily decisions about how to run the business. **Q 49634**

This is the latest in a series of monthly discussions with Harvard Business Review authors on topics of interest to IT managers.

## Balance of Change

Distribution of change trajectories among U.S. industries between 1980 and 1999:



SOURCE: HARVARD BUSINESS REVIEW



# ThinkTank

## BRAIN FOOD FOR IT EXECUTIVES

### Building Bridges: Marketing and IT

It's no secret that the IT and marketing departments have trouble understanding each other. That's a shame, because marketers are striving to integrate vast sources of data, present targeted messages to consumers and increase the measurability of marketing – all of which require technology. Yet a study conducted by Alpharetta, Ga.-based Aelera Corp. last year found that only 61% of marketing projects succeed, a record that the IT services firm says could be improved by an average of 15% through a better relationship between marketing and IT.

Marketers typically say that IT is

slow, inflexible and clueless about customers, while technologists say marketing types do a poor job of explaining what they need. In a recent bulletin, Elana Anderson, an analyst at Forrester Research Inc., went so far as to call the relationship dysfunctional – but not irreparable.

Anderson identified the following ways bellwether companies can improve their marketing/IT relationships:

- Move some IT staffers into the marketing group for dedicated IT support.
- Create a marketing services team that fulfills ad hoc requests for data and custom reports.



- Make technology decisions through a cross-functional committee.
- Have a chief marketing officer who sits at the executive table with the CIO.
- Develop a strategic technology road map for marketing.

– Mitch Betts

### Thought Leader

In a recent interview published on Gartner Inc.'s Web site, Intel Corp. CIO Doug Busch expresses some exasperation with IT's reputation for boondoggles: "IT has been the poster child in the media for failed business projects,"



DOUG BUSCH

Busch says. "But name another function that's done better. Acquisitions delivering forecasted financial return? New products making it to market on time and on budget? Executive hires who turned

out as anticipated? IT is not that bad in comparison."

Busch also says in the wide-ranging interview that every group within the IT department needs to have "a forward-looking R&D component. If you don't look downstream at opportunities in front of you, you choke off the path of continuous improvement."

### Things to Ponder

■ Press release: "Judy Ravin, director of English Communications Services LLC, an accent-reduction firm in Ann Arbor, Mich., has produced a new system to help foreign nationals lose their accents. 'Lose Your Accent in 28 Days' combines a CD-ROM with an audio CD and a book to help professionals lose their accents in just one month."

■ The average CIO tenure has improved from 18 months to 30 months in the past two years, says Meta Group Inc. analyst Jonathan Poe.

■ IT spending averages 7.4% of revenue at companies where top executives view IT as a significant enabler of the company's growth, but only 4.7% of revenue at companies where executives view IT as a growth inhibitor, according to a survey of 203 executives by New York-based Bain & Co.

■ Forrester Research predicts that the next boom in IT spending will start in 2008 and continue through 2016.

■ Enterprise IT architecture typically focuses on technology and business processes but almost never focuses on

the social aspects of work and the workplace, says Meta Group analyst Mike Gotta. So in the near future, companies will need to hire "social architects" to find out how people really work, communicate, collaborate, innovate and solve problems, he says.

☎ 49502

### Pain Points

Which technology areas are the greatest sources of pain in your organization today?

1. Security
2. Storage
3. Software license management
4. Remote access
5. Network performance management
6. Wireless LAN/Wi-Fi

BASE: 104 C-level executives at U.S. businesses with more than 100 employees  
SOURCE: SAGE RESEARCH INC., NATICK, MASS., JUNE 2004

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### The IT Economy

■ "The Lukewarm IT Recovery Continues" is the headline on a recent Forrester Research bulletin. Forrester says, "We've shaved our forecast for U.S. IT spending growth in 2004 to 5% from 6%." But lukewarm is better than the deep freeze of 2001-2003. "The moderate pace of IT spending growth in the U.S. and Canada offers IT buyers a perfect combination of low prices and minimal concerns about vendor viability," Forrester says. "While vendor consolidation is picking up... there still is more than enough competition for IT buyers to push for – and get – significant discounts in price, especially in software."

■ There may be an uptick in year-end spending, but expectations for next year's IT spending took a dip this summer, according to a survey of 100 corporate CIOs by The Goldman Sachs Group Inc. in New York. When asked in August for their predictions, the CIOs said their IT capital budgets will grow only 1.9% in 2005, a sharp drop from the 3.6% forecast they made one month earlier.

### Year-End Tech Spending Spree?

Will your company make new investments in the following technologies between now and the end of the year?

#### Hardware

|            |     |
|------------|-----|
| PCs        | 80% |
| Servers    | 72% |
| Networking | 68% |
| Storage    | 56% |

BASE: 639 IT decision-makers at North American and European enterprises, multiple responses allowed.

#### Software

|                     |     |
|---------------------|-----|
| Security            | 67% |
| Application servers | 60% |
| Databases           | 53% |

BASE: 873 IT decision-makers at North American and European enterprises, multiple responses allowed.

SOURCE FOR BOTH: FORRESTER RESEARCH INC., CAMBRIDGE, MASS., AUGUST 2004



# Career Watch

## Hacking for the Home Team

Jason Larsen, 31, is a hacker for the good guys. According to Reuters News Service, Larsen's job is to find the weaknesses in the security of America's pipelines, railroads, utilities and other infrastructure as part of a project backed by the Idaho National Engineering and Environmental Laboratory (INEEL) in Idaho Falls.

The lab, sponsored by the Department of Energy, hires expert hackers to test vulnerabilities. "I am confident that there is no system connected to the Internet that can't be hacked into," Laurin Dodd, who oversees the INEEL's national security programs, told Reuters.

To demonstrate, Larsen recently hacked into the controls of a nearby chemical plant and found an online video camera inside that confirmed that he had pumped up a pressure valve.

"It's the challenge," Larsen explained.

"It's you against the defenders."

INEEL officials recalled a recent visit by an Idaho utility executive who was convinced that his system had no problems. After a demonstration, the shaken executive requested a comprehensive review of his company.

Larsen and his employers are close-mouthed about his background. "I learned my hacking back when it was a cool thing," he told Reuters. INEEL officials added that their hackers need security clearances and can't have criminal records.

The lab is part of the Department of Homeland Security's efforts to boost defenses against possible attacks of all kinds. The challenge, the INEEL told Reuters, is to encourage cybersecurity without inspiring nefarious acts. "What you don't want to do is increase the threat by advertising what you can do," Dodd said.

## TOP 10 IN OFFSHORING

According to TechsUnite.org, a Web site sponsored by the Communication Workers of America and an advocate of establishing technical employee unions, 251,332 jobs have gone offshore since January 2000, resulting in 141,235 jobs lost. Here is its list of the top 10 offshoring companies:

| COMPANY                       | JOB OFFSHORED | ESTIMATED JOBS LOST |
|-------------------------------|---------------|---------------------|
| Electronic Data Systems Corp. | 20,000        | 2,750               |
| Convergys Corp.               | 14,000        | 100                 |
| General Electric Co.          | 14,000        | Unavailable         |
| Accenture Ltd.                | 10,000        | Unavailable         |
| Computer Sciences Corp.       | 7,700         | 5,400               |
| MCI Inc.                      | 7,500         | 800                 |
| Dell Inc.                     | 6,500         | 5,700               |
| Standard Chartered PLC        | 6,500         | Unavailable         |
| Sabre Holdings Corp.          | 6,200         | 6,200               |
| Delta Air Lines Inc.          | 6,200         | Unavailable         |

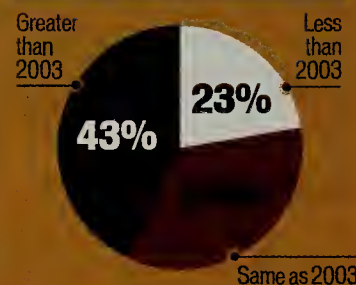
## Tough Times For Contractors

Of firms using offshore outsourcing, 48% have cut back on the number of contractors they employ, according to Forrester Research Inc. Even with demand for IT professionals up slightly this year, the market has been unable to absorb excess contractor talent. Most hard-hit are contractors with skills in PeopleSoft and Siebel implementations. As a result, billing rates for contractors have fallen dramatically, Forrester says.

## RETAINING TALENT A TOP WORRY

Although there's not a whole lot of hiring going on, CIOs are thinking hard about how to keep the IT talent they have. At its recent SIMposium in Chicago, the Society for Information Management polled 160 senior IT leaders about their concerns. Retaining IT professionals came in near the top of the list, second only to aligning IT with the business.

### 2004 IT HEAD COUNT, COMPARED WITH 2003



BASE: 160 senior IT leaders

SOURCE: SOCIETY FOR INFORMATION MANAGEMENT, CHICAGO, SEPTEMBER 2004

## Who Does What

The U.S. Department of Labor's Bureau of Labor Statistics recently reported these work/life statistics for 2003:

- Employed men worked about an hour more per day than employed women - 8 vs. 7.1.
- Employed adult women spent about an hour more per day than employed adult men doing household activities and caring for household members.
- One in five employed persons did some or all of their work at home.
- Adults in households without children spent about 1.4 hours more per day engaged in leisure activities than those with children.

## Executive Checklist

The top management skills most valued in managers and executives today:

Good communication skills

A sense of vision

Honesty

Decisiveness

BASE: 133 human resources managers; multiple responses allowed.

SOURCE: RIGHT MANAGEMENT CONSULTANTS, PHILADELPHIA, SEPTEMBER 2004

## Wait, Wait, I'm Not Finished!

The average tenure of a CIO in the federal government is about two years. But many current and former federal CIOs say that they really need three to five years to become effective, according to a report by the Government Accountability Office. "According to some current CIOs, high turnover is a problem because it can limit CIOs' ability to put their agendas in place," the GAO says. For one thing, it takes time for a CIO's plans to show up in an agency's budget request and then in congressional appropriations. The high turnover rate is a result of the political nature of the job and lower pay relative to the private sector.

- Mitch Betts

## SALARY SQUEEZE CONTINUES

Spending on IT staff in the form of salaries, benefits and overhead is likely to be one of the weakest parts of the overall IT budget during the next five years, according to a recent report by Forrester Research. Offshore outsourcing, automated server management in the data center and increased use of packaged rather than custom applications all decrease the need for new hires and keep salaries down, Forrester says. It predicts modest growth of 3% per year in median IT salaries and benefits and staff-level growth of only 2% to 3% through 2008. ☎ 49559

Project managers, business analysts and IT architects

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Programmers and computer operators



## EXEC TRACK

## Lapore Made CEO At Drugstore.com

DAWN G. LAPORE has accepted the position of CEO and chairman of Drugstore.com Inc., an online provider of pharmacy products. Lapore is currently vice chairman of technology, operations and administration at The Charles Schwab Corp., where she has served in a variety of positions, including CIO, over a period of 21 years. She will step down from her positions at Schwab before joining Bellevue, Wash.-based Drugstore.com.

## Yates Joins KeyCorp as CIO

STEPHEN E. YATES has joined KeyCorp, a Cleveland-based financial services company, as executive vice president and CIO, reporting to Chief Administrative Officer Tom Stevens. Yates most recently was president of Information Technology Co., a unit of USAA. Before that, he ran IT departments at Rockwell Automation Inc., a Milwaukee-based division of Rockwell International.

## Marvel Taps Cho For CIO Post

Marvel Enterprises Inc., a New York-based entertainment company, has appointed DAVID CHO as CIO. Previously, Cho served in various positions at The McGraw-Hill Cos. in New York, including senior vice president of applications and operations, and senior vice president of technology and communications.

## Claudio to Head IT At Align Technology

Align Technology Inc., a maker of dental appliances in Santa Clara, Calif., has named CECILIA CLAUDIO vice president of engineering and CIO. She will report to CEO Thomas M. Prescott. Most recently, Claudio was CIO at Zurich Financial Services.

PAUL GLEN

## To Each His Own

**I** GIVE A FAIR NUMBER OF SPEECHES for conferences and private IT department meetings, and there's almost always a chance for questions and answers during the formal presentation. Afterward, I hang around and frequently get different questions, the ones that no one wants to ask in front of a big group.

Among the most common are those about the mechanics of how I write and prepare for speeches. "Where do you get your column ideas?" "When do you write?" "What time of day?" "Where?" "Do you use paper or a word processor?" "Do you do outlines?" "Do you rehearse?" "Do you try out those jokes and stories on your wife?" The permutations are almost endless.

In many ways, these inquiries are quite flattering. Someone admires what I do enough to want to emulate it. (Or perhaps they hate it so much that they want to avoid being remotely similar.)

But I always answer these questions with mixed feelings. I know that I'm not giving the interviewers any truly useful information, because they've asked me the wrong questions.

Rarely do they really want to know where I sit or how I work. What they do want to know is, "How can I write and speak in my

own way?" Or, "How can I express myself in the pages of magazines and the platforms of meetings?"

Unfortunately, the only honest answer to what they're really asking is, "I don't know how you can do your own version." Just knowing how I work won't really help them much.

I can explain the workings of the publishing industry. I can tell you about the mechanics of how speeches

are solicited, bought and sold. But, in truth, this will give you no help in writing funny and enlightening articles or in the art of delivering entertaining and perception-transforming speeches.

No one can tell another person how to be most productive when it comes to creative work. The methods are highly personal. If there were one good way, we would long ago have developed a surefire process for writing Pulitzer Prize-winning novels. You'd just have to follow the steps (require-

ments, planning, design, writing, editing, printing and so on), and out would pop a work of genius.

It is critically important for managers of technical staffs to understand this. Most technical work, despite what many process gurus will tell you, is largely a creative endeavor. You can slice it and dice it any way you want, but in the end, there's always a box on the project plan that

says, "Magical insight happens here."

If you want to encourage your staffers to operate at their peak potential, here are a few things you ought to consider:

**Don't try to impose your work habits on your subordinates.** Most managers got where they are by being great producers (despite the *Dilbert* imagery). But just because some particular approach to work is good for you doesn't mean it's equally effective for everyone else. Just because you keep everything in folders and have a clean desk at the end of the day doesn't mean that some people on your staff won't be much more productive with a blizzard of paper filling the room.

**Don't believe that there is any one right way to do something.** Uniformity for uniformity's sake isn't a particularly good goal. It may be comforting for you as a manager to know that all of your staff operates in precisely the same way. Thinking of people as interchangeable parts makes management relatively simple, but it's a mistake. You'll be giving up a lot of the value of the individuals on your staff if you think that way.

**Encourage your staffers to find their own personal styles.** Most technical staff members want to do things the right way and are constantly on the hunt for best practices. It's important to let your people know that variations in style are normal and acceptable. Otherwise, they'll spend lots of time looking for the least-common-denominator approach, and that saps energy and productivity.

Giving people the permission and responsibility to find their own workstyles both frees them to search for their own best practices and sets the expectation that they will produce as best they can. **49487**



PAUL GLEN is an IT management consultant in Los Angeles and the author of the award-winning book *Leading Geeks: How to Manage and Lead the People Who Deliver Technology* (Jossey-Bass Pfeiffer, 2003; [www.leadinggeeks.com](http://www.leadinggeeks.com)). He can be reached at [info@c2-consulting.com](mailto:info@c2-consulting.com).

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# IT Careers: ITAA Report Pinpoints 2004 Hiring Trends

If it feels like there's even more competition for even fewer jobs, you're right. According to the 2004 Workforce Development Survey from Information Technology Association of America, hiring managers will recruit just under 230,000 IT professionals this year. That's down from 2003 when 500,000 IT workers were hired with a net increase of approximately 200,000 new jobs.

The ITAA report echoes the latest forecast from tech hiring firm Robert Half & Associates. The Robert Half survey of 1,400 chief information officers reports a fourth-quarter hiring increase of 1%.

Despite the continued trend of holding the line on cost and productivity, the 500 hiring managers polled by ITAA in its annual survey did have sound advice and data to help IT professionals look at their own career plans.

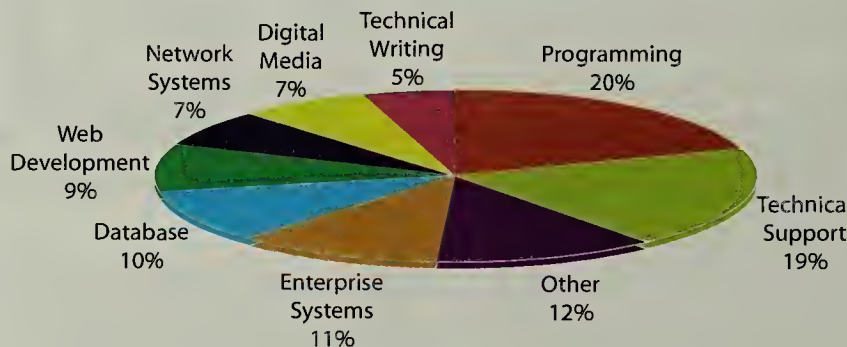
## What's Driving the Hiring

Varied trends are driving the hiring for 2004. They include the opening of entirely new markets for IT products and services. Opening India, China, Africa and other countries to technologies will require newly defined products that meet requirements for harsher environments – from lack of electricity to illiteracy. At the same time, there are strident requirements on cost as the developing countries need technology that's inexpensive and easily used. Other trends, identified by ITAA, include the need to push technology to do more for business and for everyday living, new quality and value expectations, methods to simplify increasingly complex capabilities, and new demands for national and business security.

## What They're Looking For

According to the ITAA report and despite repeated focus by CIOs on a blend of educational and business capability, the most important requirements for landing a job in 2004 are related job experience and a four-year degree. The hiring managers also identified certifications and other on-going learning as tickets to consideration. For the first time, the managers also pointed to interpersonal skills as critical in landing a job – more important, in fact, than team building and program leadership.

\*2004 IT Workforce: Job Categories as a Percentage of Total IT Workforce



Specifically, software programmers and engineers continue to make up the biggest segment of the job market. However, the largest increases in hiring come in other areas – technical support, network systems, and database development and mining. The hiring managers report that

tech support, long the focus of outsourcing, includes everything from call center support to installation of new equipment and systems to replace aging technology.

## Where the Jobs Are

Just as important as the right mix of skills and personality is the ability to go where the jobs are. The ITAA workforce survey found that hiring and IT populations continue to move across the country, bridging the two coasts.

The South, as a region, has the most IT workers with 3.1 million. In 2004, companies in the South expect to hire 71,199 additional IT professionals. The Midwest follows closely with hiring managers planning to bring on 60,413 workers.

While the geographic mix is fairly strong, so too is the mix of types of businesses and services that are hiring. According to the ITAA survey 72 percent of the jobs will be found in small business versus mid-sized or large companies. And just under 80% of the jobs will be in non-IT companies.

\*Source: ITAA "Adding Value...Growing Careers Annual Workforce Development Survey," 2004

For more information about IT Careers advertising, please call: 800.762.2977

Produced by Carole R. Hedden

## IT PROFESSIONALS

### Manager

(Glen Mills, PA and other locations throughout the United States). Perform applications development and systems integration work utilizing Oracle E-business suite, middle ware technology and third party systems, including Web Application, Data Warehouse and legacy systems for major corporate clients in diverse industries. Engage in Software Evaluation, process reengineering, vendor planning, conceptualizing, and envisioning advanced technology solutions to meet the business needs of clients. Responsible for the delivery, implementation and support of Oracle ERP Applications modules as well as the design and development of the Custom Interfaces including receivables TCA Architecture, Accounts Payable (AP), Accounts Receivable (AR), Order Management (OM), Install Base, Service Contracts and enabling Check and Invoice printing through Oracle Payables. Oversee the data conversion from the disparate systems, identify and make tuning recommendations for the performance issues related to Oracle relational database. Involved in defining the Standards for coding, error messages, performing the code reviews and ensuring the quality control of the deliverables. Participate in various practice development activities, including conducting technical screens, preparing presentations, mentoring consultants and less experienced Senior Consultants.

\$81,600/year. Mon-Fri 9:00am-5:00pm. The minimum requirements are as follows: Bachelor's degree or equivalent in Computer Science, Engineering (any type), Information Systems or Business Administration plus 4 years of experience in the job offered or 4 years of experience as a Senior Consultant, Consultant, Senior Systems Engineer or Programmer Analyst. Employer will regard a foreign degree to be equivalent to a U.S. Bachelor's degree as determined by an accredited credentials evaluation service. Related experience must include at least one year with Oracle ERP, including TCA architecture, Accounts Receivable (AR), Accounts Payable (AP), General Ledger (GL), Order Management (OM), PL/SQL, Data Warehousing and Middle Ware Technology.

Please send your resume, referencing Job Order Number **WEB456503** to the: PA CareerLink, 701 Crosby Street, Suite B, Chester, PA 19013. EOE.

## Computers

### Director of Consulting (Professional) Services

Manage and develop the Professional Services Department for specialized software company. Min. MS/or equiv. mathematics/computer science / 4 years project, personnel, operations mgmt for orgs of more than 7 persons. 4 yrs. exp. document mgmt, digital imaging, and Microsoft.NET. Job site: Readsoft, Inc., Metairie, LA 70002 (apply staffing-us@readsoft.com).

## Computer Support Specialist

provide tech assist, troubleshoot, security, train'g & support in networked web enabled business & software (Webtrends, Livestat) us'g VB, HTML, ASP, VB & Java Script & Cold Fusion. Investigate & resolve user's soft/hardware probs. Answer inquiries re & assist w/applics, print'g, word process'g, programm'g languages, e-mail & operat'g systems. Plan, implemt & admin info systems & back up & recovery strategies. 35 hrs. 2 yrs coll (Info Tech) + 2 yrs exp in job offd reqd. Fax resume & salary reqmts to (703) 952-0244, Attn: H.R. Reimers Sysys.

## Omnisoft, Inc.,

Software Engineers: Research, design, develop, analyze, test, and recommend software requirements for E-commerce database applications as well as develop and perform database maintenance for automobile and insurance industry clients. Use object-oriented programming using Oracle, Java, Perl, XML, Solaris, Web logic, C++ and current Web Technologies in Windows, Unix, and Linux environments. Need Bachelor's Degree in Computer Science or related and 2 years of experience. Programmer Analysts: Design and develop Enterprise Resource Planning, Customer Relationship Management, ASP, Data-warehouse applications. Use current web technologies, web services, Stored procedures and SQL. Work in Unix Environment and Unix Shell Scripting. Need 2 years of experience in relevant field.

Send resume to: HR Manager, Omnisoft, Inc., 2215 W. Russell Ave. Sioux Falls, SD 57104 or via e-mail at [hr@omnisoftinc.net](mailto:hr@omnisoftinc.net)

## Programmer Analyst - Java:

Wanted by an IT consulting firm in Keene, NH to work at various client locations throughout USA. Respond to HRD, Infowave Systems, 39 Central Square, Suite #201A, Keene, NH-03431

Requires: Bachelor Degree in Computer Science or related field and one year experience. In the alternative will accept applicants with three years of university level education plus three years of experience performing analysis, development and testing of enterprise web applications. Primary experience must incl working with technologies such as J2EE, XML suite, BPMS, Shell scripts, RDBMS Design, Development and Tuning, Middleware on UNIX.

NE OH Software, Co. seeks Software Eng. I to assist w/in designing/ developing computer sys; apply principals and tech. of computer science, engineering, and mathematical analysis; analyze software req. to determine feasibility of design and to customize Web and Workflow Solutions at different customer sites. Design /implement customer solutions utilizing the application package developed with technology such as OnBase API, VB, JavaScript and Crystal Reports. Bachelor's degree in Information Systems or equiv. and 3 mos. exp. in job / job related req. exp. must include work with Visual Basic/VB .net programming exp. req.; ASP/ ASP .net exp.; SQL (Oracle, Sybase, DB2, MS Access, MS SQL Server), HTML, JavaScript, ASP, PHP, Korn Shell Script, UML req. Resumes: H.R. Dept., TH 04, 28500 Clemens Road, Westlake, OH 44145 or email to [nova.slusa@onbase.com](mailto:nova.slusa@onbase.com). No calls. EOE.

Oracle Clinical Consultant to plan, design study in Oracle Clinical 4.0; develop DCMs, remote data entry screens, DCIs etc; design, develop validation procedures using PL/SQL in Oracle Clinical's validation module; develop SAS, SQL views using TOAD, SAS, Oracle Clinical; perform CRF designing, database building, randomization, query resolution, reporting, subject randomization algorithms using Oracle Clinical, Normlab, SAS, SPSS, Adobe Framemaker. Require: MS in CS, Computer Engg or Statistics and 6 months exp in Oracle Clinical, SAS. Competitive salary, F/T, travel involved. Resumes to: Scott Bryant, Judge Technical Services, Inc. 3 Davol Square, Suite 3A, Providence, RI 02903.

## SENIOR WEB DEVELOPMENT ANALYST

ADT Security Services, Inc. has an opening in Boca Raton, Florida for a Senior Web Development Analyst.

Analyze business procedures and problems to develop specifications and convert them to programmable form for electronic data processing. Confer with organizational units involved to determine specific web output requirements. Study existing data systems to evaluate effectiveness and develop new, or modify current, web systems to improve production workflow.

Must possess at least a bachelor's or its equivalent in Computer Science or a related field, and relevant work experience. Experience must include Oracle, SQL and WebSphere Administration.

Resume and/or cover letter must reflect each requirement above and specify reference code SWDA/ZHS or it will be rejected.

Forward resume to Theresa Maia, ADT Security Services, Inc., One Town Center Road, Boca Raton, FL 33486.

Tryarc LLC has openings for Software Engineers in CA w/ at least 2 yrs of exp. **Job Duties:** Analyze, dvlp, dsgn, test and implmt software applns using Eclipse, VSS, ANT, XDoclet, JSP, EJB, WebLogic, Tomcat, CVS, Oracle and Rational Rose on Windows platform, and Struts Framework based on multi-tier and MVC architecture. Reqs: Master's degree or equiv. in Engg. or Comp. Sci. A bachelor's degree with at least 5 yrs. of exp. is acceptable. Exc pay & benefits. Fwd resumes with proof of work status to: [jobs@tryarc.com](mailto:jobs@tryarc.com).

**Software Engineer**, Portsmouth, NH: Design, develop, test and document EAI, B2B, B2C and Windows Applications utilizing ASP.NET, VB.NET, C#, Biztalk Server 2002, Attunity Connect, Commerce Server 2002, Content Management Server 2002, Java, JSP, JavaScript, VBScript, Visual Basic, XML, XSL, DHTML, HTML, COM and DCOM in Windows 2000 Server and Unix environment. Analyze user requirements and write design specification documents. Utilize SOAP, XML/XSL techniques for EAI Applications. Write Stored Procedures and Triggers. Perform data migration, schema design and create database objects in databases such as Oracle, SQL Server and AS/400. Assist in the preparation of technical manuals, oversee custom installation of software products and provide technical support. Masters or Foreign Equiv. in Comp. Science or Engg or Related and one year of exp. in the job offered. **\$83,500/yr**, 9am-6pm, 40hrs/wk. Send two copies of resume/letter of application to **Job Order # 2004-445**, PO Box 989, Concord, NH 03302-0989.

**SAP Business Systems Analyst**, Thomson, Inc. is seeking an SAP Business Systems Analyst to consult with clients regarding SAP software systems, provide SAP analysis, redesign, and configuration of clients' business procedures, policies, and processes, and act as liaison between the application developers and the business community to define business and system requirements. Must have 4 years of experience in SAP consulting and configuration. Send cover letter and resume to: Betty Moreno-Silva, Manager, Human Resources, Thomson, Inc., 3233 East Mission Oaks Boulevard, Camarillo, CA 93012. Please reference Job #AMM in your cover letter.



**Information Analyst II:** Develop, implement & maintain web-based Info Center using Oracle technologies; maintain Oracle database; design web pages & develop methods of info delivery using SQL, PL/SQL, HTML, Java-Script, Oracle 9iAS; migrate Cobol programs to Oracle Portal. Req BS in CS or related plus 1 yr work exp. Send resume to ACS, Kennesaw State Univ. 1000 Chastain Rd., Kennesaw, GA 30144. Ref NT

Corpus, Inc. has multiple openings for IT professionals to design and develop applications using Oracle, SAP, SQL, PL/SQL, COBOL, C/C++, VB, Java, XML, ERP, ASP, NT, XSL. Min BS/MS with exp. Travel maybe required. Please send resumes to resumes@corpusinc.com. EOE. No calls.

Meridian Technologies looks for IT professionals for various positions in the area of Oracle, SAP, SQL, Java, Web applications, Unix, etc. Candidates must have BS/MS or equivalent with some IT experience. Travel required for some positions. Please contact jobs@meridiantech.net. EOE.

**Corp. IT Specialist - R & D** for restaurant industry. Analyze software requirements to determine feasibility of design. Dev. & direct software system testing, programming, & documentation. Purch., maintain & upgrade corp. network & related equip. Dev. training manuals & train emp. on the use of the systems. Knowledge of Positouch, Panasonic, Maitre'D, Parmico, & Novell Networking. (may be gained during ed. background or through work exp). Must have MCS. & 5 yrs. work exp. in job offered or 5 yrs of exp. as an instructor of Comp.Sc. Submit resume to LM Restaurants, Inc., 2721 McNeil St., Raleigh, NC 27608.

**Graphic Designer:** Design and code interactive multimedia programs and websites for trade shows, educational and marketing programs. Render 3D models for various projects using computer soft wares and free hand sketching. Design print layouts and packages. Req. Bachelor degree or Equivalent in Graphic Design or Architecture with nine months experience in job offered. Must be proficient in Adobe Illustrator, Photoshop, 3D MAX, JavaScript, Director and Flash ActionScript. 40 hour/wk, 9-5. Send resume and portfolio sample (non-returnable) to Shaw Science Partners at 4151 Ashford Dunwoody Rd, Suite 502, Atlanta, GA 30319.

**Systems Admin** to work at various unspecified locations with the foll skills & technologies: Sun Solaris, Veritas Cluster/Volume Manager, Weblogic, Firewall, VPN & Clearcase. Bach or equiv in Comp Sci & 2 years exp. Sandlenet, Inc., 43288 Starr Street, #1, Fremont, CA 94539, fax: 510-291-2221, e-mail: jobs@sandlenet.com

**Technical Architect/Sr. Software Developer** wanted. Must have Bach. deg. in Comp. Sci., Math, Physics or related field & 3 yrs. middleware, integration & web technology exper. includ. exper. with IBM WebSphere Application Server & IBM WebSphere MQ & 1 yr. exper. providing tech. support to customers in the energy &/or utilities industries. (Exper. can be concurrent). Send cover letter and resume to Corporate Recruiting, Code EUAF, LogicaCMG, 32 Hartwell Ave., Lexington, MA 02421. No third parties or phone calls please. LogicaCMG is an EEO, M/F/V Employer.

**Fast Enterprises, LLC** is seeking a **Senior Systems Analyst** to plan, design and direct system transition to COTS solution for revenue agencies throughout the U.S. Interested, degreed, experienced professionals, please respond to:

**Senior Systems Analyst**  
Recruiting  
L. Forest  
800 Park Boulevard  
Suite 720  
Boise, ID 83712

**Programmer-Analyst:** Write program specifications, using JD Edwards World, JD Edwards One-World, JDE OneWorld, CNC Administration, RPG/400, AS/400 Administration, CLP, JDE Case tools to develop electronic commerce internet; implement Version Control Management; formulate plan outlining steps, using structured analysis and design. Req 4 yrs of work exp in related field. Send resume to Moorecroft Systems, Inc. 202 Abbey Court, Alpharetta, GA 30004. Ref KY

**Programmer Analysts, Database Administrators, Engineering Programmers, Software Engineers** needed—mult openings in locations throughout the US with at least one year exp in any of the following:  
• C or C++, UNIX  
• Perl, Oracle, UNIX  
• QA Analyst  
• Oracle Developer  
• Java Developer  
• Visual Basic, ASP, SQL Server.  
• SAP  
• Oracle Financials  
• PeopleSoft  
• Unix or NT Administrator  
Unified Business Technologies, Inc. ATTN: Human Resources 41400 Dequindre Road, Suite 105 Sterling Heights, MI 48314 An Equal Opportunity Employer

**Programmer Analysts/Database Administrators** needed. Seeking qual. candidates possessing BS or equiv. and/or rel. work exp. Duties include: develop & implement physical database design; create database objects, business rules & database authorization. Work w/ PL/SQL, Pro\*C, Oracle, ETL, ClearCase, COGNOS. Fwd. resume & ref. to Software Galaxy Systems LLC, 4390 US Route 1N, Suite 210, Princeton, NJ 08540.

**Computer Programmer Analysts** (multiple openings at various locations): Livonia, MI with foll skills:

- FileNet IDM Desktop, IDM Web, Capture, Visual Workflow, IDMS, IDMSD, ASP, Java Script, MS SQL, & Oracle on Windows & Novel Networks.
- AllFusion Data Modeler, Rational Rose, Oracle, Ascential Datastage, Informatica, Business Objects, Crystal Reports, Sun Solaris, Unix, Windows NT, Oracle PL/SQL, Pro\*C, & Designer 2000.

Req: Bach degree in Math/ Sci/Comp Sci/Engg/Electronics/ MIS/Comm/Bus. Mgt/ Admin or foreign equiv & 2yrs exp in technologies & job duties. Will also accept 2 yrs college education & 3 yrs exp or any suitable combination of education, experience and/or training that meets minimum requirements. Travel and/or relocation possible.

Respond by resume to: HR, Datamatics Technologies Inc., 31557 Schoolcraft Road # 100, Livonia, MI 48150-1822, OR by Fax #: 734-525-3734.

**Computer Systems Analyst**  
L'Oreal USA is seeking a Systems Analyst for New York City location to design, develop, test, implement and maintain web-enable business applications supporting retail product placement management software platforms (Intactix Space Planning Plus and Intactix Knowledge Base); using C#, Java and Microsoft ASP.NET programming as well as MS SQL and Oracle relational database design and development skills; and use knowledge and understanding of relational managed reporting, multi-dimensional database modeling, user interface and reporting principle within Cognos Business Intelligence tool suite to design report formats and generate analysis cubes. Position requires a BS in Computer Engineering, (including Cognos Business Intelligence tools, C#, Java and ASP.NET). Please fax resume and cover letter with salary history/requirements to: Human Resources (212) 984-5038. EOE.

**Prog/Analysts** to analyze, design software apps using Java, JSP, Servlets, XML, ASP, Visual Basic, EJB, JavaScript, HTML, DHTML under Windows, UNIX OSs; design APIs for backup/recovery framework; provide on site maintenance support such as debugging, modifications, fine tuning & code optimization. Require: BS or foreign equiv. in CS/Engg.(any branch) & 2 yrs of exp. in IT. F/T. competitive salary. Travel involved. Resumes to: HR, Semafor Technologies, Inc., 3300, Holcomb Bridge Road, Ste212, Norcross, GA 30092.

**Technical Lead:** (with Bachelors degree and 3 years experience), West Chester OH. Job entails and requires experience in design and development of applications using IIS Apache, Weblogic, SunOne Directory Server, SiteMinder Policy, SiteMinder Web Agent, Windows 2003, and Solaris. Attractive Compensation package, Send Resume to Madeline Rossero, 65 Water Street, Norwalk, CT 06854

#### Educational Software Developer

**Description:** Develop and maintain web based software configuration survey application for Workforce Timekeeper and HRMS Products. Develop new releases and maintain existing release of application for creating simulations and tutorials of Company software applications. Develop installation scripts to install on Windows clients. Maintain registration application for Educational Services web based student registration system. Support system on internal and external web sites. Maintain Company Educational Services learning paths applications. Provide reporting for application as needed.

**Requirements:** Requires a Bachelor's degree in Computer Science or a related field or the equivalent. Requires 5 years of experience developing web and client server based applications. Requires Microsoft Applications or Solutions Development Certification. Requires solid understanding and ability to work with the following technologies: Microsoft Visual Basic 6; Active Server Pages; VBScript; JavaScript; Flash MX & Actionscript; XML & XSLT; Microsoft SQL Server (SQL, Constraints, Stored Procedures); Microsoft Access; ADO; IIS; COM, COM+, Active X technologies; Visual Source Safe, Crystal Reports 7.0 or 8.0; Windows 2000, and Windows NT. Must have ability to approach situations with energy and enthusiasm; good analytical skills; communicate effectively, gain credibility, and develop productive working relationships with others; function in a fast-paced environment under time pressure; and be a flexible team-oriented individual who shows initiative and demonstrates flexibility and can deliver in a team environment.

Please submit your resume and salary requirements to: Thomas Bartiromo, Director, Corporate Staffing at corporateemp@kronos.com or Kronos, Inc., 297 Billerica Road, Chelmsford, MA 01824. Applicants must have proof of legal authority to work in US.

**BCC USA Inc - South Portland, ME** needs experienced Programmer Analysts having a Bachelors Degree with minimum two years of progressive experience in Design, Development and Deploying multi-tiered web based applications in a distributed environment using JAVA/J2EE, Servlets, JSP, STRUTS, EJB, WebLogic, Sybase and IBM DB2. Must have experience in using UML modeling tools with Rational Rose / TogetherSoft and IDE Eclipse. Must have experience in Apache ANT for build / deploy J2EE applications. Competitive salary and benefits. M-F, 40 hours/week. Please mail your resume to BCC USA Inc., HR Department, 650 Main Street Suite 201, South Portland, ME - 04106.

**BCC USA Inc - South Portland, ME** needs experienced Programmer Analysts having a Bachelors Degree with minimum two years of progressive experience in Analysis, Design, Development and Implementation of Java / J2EE based applications using JSP, Servlets EJB, JDBC, JNDI, Java Beans, WSAD, Web Logic, Struts (MVC) Framework, Vignette Content Management Suite, XML, XML Spy, XSL, Oracle, IBM DB2 and IBM MQ Series. Must have experience in implementing RUP methodology. Competitive salary and benefits. M-F, 40 hours/week. Please mail your resume to BCC USA Inc., HR Department, 650 Main Street Suite 201, South Portland, ME - 04106.

#### IT PROFESSIONALS

##### Consultant

(Glen Mills, Pennsylvania and other locations through the U.S.). Design, test, develop and implement custom web applications (Ecommerce web technologies) for automated government labor exchange systems utilizing labor exchange models used in states' public systems and private sector entities. Implement a custom developed n-tier labor exchange system using Ecommerce technologies, legacy mainframe architecture, Object-Oriented Analysis and Design, relational database design and theory, Unified Modeling Language (UML) and Object relational mapping. Conduct Joint Requirements Planning (JRP) sessions and Joint Application Design (JAD) sessions to gather system functional requirements and to present proposed designs and solicit user acceptance. Conduct unit, functional, regression and system testing to ensure system quality. Apply current Department of Labor (DOL) regulations to real systems design decisions involving knowledge of Workforce Investment Act and Wagner-Peyser Act, federal and state workforce registration guidelines and unemployment insurance profiling and sanctioning rules. Formulate job matching models adhering to federal and state regulations to meet labor market entity needs. Map DOL legacy classification systems to new specifications including Dictionary of Occupational Titles (DOT) codes to Occupational Information Network (ONET) codes and Standard Industrial Classification (SIC) codes to North American Industrial Classification System (NAICS). Utilize Section 508 Accessibility Guidelines in applying Ecommerce systems. Evaluate competing labor exchange IT design and development methodologies and use selected methodology to develop prototypes and finish labor exchange systems that meet state and federal requirements.

WAGE: \$75,779.60/year  
Hours: Monday-Friday 9:00am-5:00pm

##### MINIMUM REQUIREMENTS:

Bachelor's degree in Computer Science, Math, Engineering (any type), Information Systems or Business Administration + 2 years exp. in the job offered or 2 years exp. as a Consultant, Systems Analyst or Developer. Related experience must include design, testing, development and implementation of custom web applications (Ecommerce web technologies) for automated government labor exchange systems. Related experience must include Object Oriented Analysis and Design, relational database design, and mainframe experience as well applying current Department of Labor regulations to real system design decisions involving the Workforce Investment Act.

Please send your resume, referencing Job Order Number **WEB458815** to the: PA Careerlink, 701 Crosby Street, Suite B, Chester, PA 19013-6096. EOE.

**Lead Network Architect** Consultant wanted by a Telecommunications Network Service co. in Garden City, NY & Huntington, NY. Providing design, engineering, planning and integrating cost effective IP network solutions in support of Network requirements for the company and 26 of its business units; researching and applying new technologies to reduce corporate costs and improve productivity and network reliability. Must have a Bachelor's degree in Comp. Sci. or related field & 5 yrs. exp. as a Network Specialist/Analyst/Communication Specialist with 2 yrs. exp. leading personnel or providing training classes; knowledge of networking including router or concentrator configuration protocol fundamentals; specialized knowledge of computer communications systems and advanced Cisco Router and routing protocols; must also have knowledge of the following: TCP/IP and protocol analyzers; Cisco Switches and/or WAN Technologies; approaches and logic for designing TCP/IP WAN Networks (equipment selection, configuration, software, routing etc.); and understanding of Mainframe communication with a systems programming background. Other Special Requirements: CISCO CERTIFICATION or equivalent expertise. In lieu of a Bachelor's degree, we will accept an additional two (2) years of progressive experience in the job offered or related occupation. Please respond to CD Telecom (Quantitude) Attn: Bill Ramsey, Ref#1818, 6901 S. Havana Street, Centennial, CO 80112.

**Statistical Programmer:** Cary, NC. Design SAS programs to manage data from clinical drug trials. Develop programs for test validation according to FDA regs. Req. degree and exp. with mgmt. of clinical trial data using SAS programs. Send resumes to: George S. Besse, ASG, Inc., 2000 Regency Parkway, Suite 355, Cary, NC 27511.

**Teksoft Inc** is a growing software development and consulting firm in Houston. We are looking for Computer Professionals for the following positions.

**Software Engineer:** Research, analyze, design and develop internet programs for WEB based knowledge management, customer relationship management, sales force automation and e-commerce for development of SAP packages. Must have knowledge of any SAP (I.S.) Industry Solutions modules. Requires Masters degree in Computer Science or in a related field and 1 one year of experience in the advertised position or in a similar position and ability to use SAP Industry Solutions modules. Must be willing to travel.

**Programmer Analyst:** Plan, test and develop internet based programs for ERP packages, CRM, Sales force automation and E-Commerce. Requires a Bachelors degree in Computer Science or in a related field and one year of experience in the advertised position or in a similar position and ability to use ERP and CRM. Must be willing to travel.

**Accounts Analyst:** Manage multiple accounts and develop SAP Finance Modules to track revenues and expenditures. Present quarterly reports and annual projections based on revenue received and expenditures. Requires a Bachelors degree or equivalent and one year of experience in the advertised position or in a related position with the ability to use SAP Finance modules and Quick Books. Must be willing to travel.

Send Resume and Cover letter to: Teksoft, Inc. 6201 Bonhomme, Ste. 470-S, Houston, TX 77036.

**Systems Administrator** sought by medical diagnostics co. Req Bach or its foreign equiv in Electronics/Comp. Engg. Resume to: HR Dept., Northland Radiology, Inc., 26222 Telegraph Rd, #100, Southfield, MI 48034.



## IT PROFESSIONALS

## Consultant

(Glen Mills, Pennsylvania and other locations through the U.S.). Involved in the analysis, development and implementation of systems, or business processes by utilizing technical expertise and knowledge of public sector industry as well as state and federal regulations, including the design of enterprise level Health and Human Services Systems. Utilize large systems development lifecycle experience to build and implement 3-tier client/ server application systems. Perform needs assessment and fit/gap analysis between client requirements and existing functionality, and create technical documentation. Create detailed system design specifications for program objects, and system / technical requirements (business processes, infrastructure, interfaces, reports, enhancements, and/or conversion). Develop 3-tier client/server application systems using Powerbuilder, Visual Basic and Visual Basic Script with Oracle or DB2 back-end. Create test data and write test scripts and scenarios. Design, develop, test and implement interfaces between multiple enterprise level systems. Perform data conversion from legacy to enterprise systems. Create design specifications for conversion programs, develop and test conversion programs and scripts and assist in manual conversion. Create large-scale transactional processing systems utilizing relational databases for data storage.

Salary \$75,000 per year. Mon-Fri, 9:00 am to 5:00 pm. The position requires: Bachelor's degree or equivalent in Engineering (any), Computer Science, Math, Business Administration or Information Systems + 2 years of experience in the job offered or 2 years of experience as a Systems Analyst, Consultant Research/Graduate Assistant, Network & Web Server Admin. Related experience must include at least 1 year of consulting experience in Public Sector industry including State and Federal regulations, design of enterprise level Health and Human Services Systems; detailed system design specifications for program objects; and large systems development lifecycle; Powerbuilder; DB2; and 3-tier client/ server application development

Please send your resume or C.V., referencing Job Order Number WEB458827 to the: PA Careerlink, 701 Crosby Street, Suite B, Chester, PA 19013-6096. EOE.

**PROGRAMMER/ANALYST**  
**Werner Enterprises, Inc.**

**Duties:** Design, program, maintain and support web-based and Geographic Information Systems (GIS) solutions using advanced object-oriented programming skills with current web technologies and knowledge of GIS layer, asset management and positional tracking technologies.

**Education & Training:** Bachelor's degree in Computer Science, MIS or a related field.

**Experience:** Two (2) years experience in programming/web application development using GIS and J2EE technology. Requires working knowledge of HTML, Java, Cold Fusion MX and Flash MX.

**Hours & Wages:** 40 hours/week; \$56,100/year.

**Reference:** Persons interested in this position may send correspondence to:

Christina Boyer-Hutless  
 Werner Enterprises, Inc.  
 14507 Frontier Road  
 Omaha, NE 68145-0308

Please reference Code # KAR001.

Position is located in Omaha, Nebraska. No assistance with relocation expenses is offered by the Company. Applicant must have proof of legal authority to work in the United States.

**SR. PROGRAMMER/ANALYST (WEB)**  
**Werner Enterprises, Inc.**

**Duties:** Participate in requirements gathering, analysis, design, modification, development, implementation and testing of software programming application; participate in code reviews; and, provide some mentoring to junior developers on techniques and processes.

**Education & Training:** Bachelor's degree or foreign equivalent in computer science or a related field.

**Experience:** Two years development experience in a corporate environment. Also requires in-depth corporate experience in Cold Fusion MX, Java Script, HTML, DHTML, SQL and IIS.

**Hours & Wages:** 40 hours/week; \$65,000.00/year.

**Reference:** Persons interested in this position may send correspondence to:

Christina K. Boyer-Hutless  
 Werner Enterprises, Inc.  
 Post Office Box 45308  
 Omaha, NE 68145-0308

Please reference Code # SAM001.

Position is located in Omaha, Nebraska. No assistance with relocation expenses is offered by the Company. Applicant must have proof of legal authority to work in the United States.

**Database Administrator:** Code, design and implement and Oracle database applications in Unix and NT environment; design, schedule and automate backup and recovery procedures; monitor and troubleshoot new Oracle releases; tune and optimize database performance; mentor peers in PL/SQL programming, Unix K-shell scripting and database concepts; design, build and administer Datawarehouse system. Must have administration/development experience in Oracle, datawarehouse design/administration in healthcare industry, PL/SQL, UNIX (Tru 64 & AIX), Oracle Portal, NT operating systems and Unix shells scripts, Java Microsoft Office applications. Oracle DBA Certification and BS in Information Systems or related field plus 6 years exp., or MS in Information System and 4 yrs. related experience. Prevailing wage and benefits. AA/EOE. Send resume to Children's Hospital, 1600 7th Avenue S, Birmingham, Alabama 35233.

**Computer & Information Systems Manager** to analyze multiple versions of financial business software to oversee projects involving the programming, coding, and testing of the entire life cycle of ProStaff resource scheduling software to insure customized business software conforms to end users business policies and informational requirements. Uses Visual Basic, ASP, and SQL as the back end to modify, install, and support customized ProStaff software to insure proper functioning in various platforms, develops real time on-line reporting functionality for users, and insures secure access to sensitive information by end users. Requires Bachelor's Degree in Management Information Systems or Information Systems Management. Also requires education to include completion of coursework in Project Management, Business Policy and Business Finance. Send resumes only, no calls, to: Jeffrey L. Kupiec, Taylor Made Software, Inc., 28 E. Jackson, Ste 1501, Chicago, IL 60604.

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## Computer Scientist

Responsible for R&D of hardware & software formal verification framework. Duties include design & implementation of formal specification language, new automated verification algorithms; overall system infrastructure; perform research in formal methods area; write research papers & technical reports. This position requires Ph.D. in CS with doctoral dissertation emphasis in software engineering & formal methods for analysis & verification of software & hardware systems. Research background to include: design, implementation; use of model checkers, static analyzers, compilers; software verification; implementation & design skills including object technology; programming skills including C++, Scheme, Emacs-Lisp, & Java; working knowledge of automatic theorem proving & formal semantics of programming languages. This position is located in Menlo Park, CA. Please apply, indicating job# 2251, via our website @ [www.sri.com](http://www.sri.com) or mailing address at 333 Ravenswood Ave, Menlo Park, CA 94025. Attn: Employment Dept. EOE/AA.

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Resume and/or cover letter must reflect each requirement above and specify reference code E/ST or it will be rejected.

Forward resume to Robbin Drew Elliott, Pitney Bowes Inc., One Elmcroft Road, Stamford, CT 06926-0700.

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Responsible for performing basic research in intelligent agent systems & applying the results to challenging real-world problems. Responsibilities will include managing maintenance & extension of existing BDI (Belief Desire Intention) agent software & leading research efforts in the area of robustness for agent systems. Requires PhD in computer science with doctoral research & dissertation emphasis in BDI agent systems plus five years experience in the application of BDI agent systems to real-world problems. Requires publication record in BDI systems. Background must include theoretical foundations of BDI agent systems; programming in Prolog, Python, Java, and Lisp; software engineering project leadership experience. This position is located in Menlo Park, CA. Please apply, indicating job# 2263, via our website @ [www.sri.com](http://www.sri.com) or mailing address at 333 Ravenswood Ave, Menlo Park, CA 94025. Attn: Employment Dept. EOE/AA

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Continued from page 1

## PeopleSoft

tion Users Group. "It sounded to me like [Conway] had the board's confidence in the past."

Andrew Albarelle, principal executive officer at Denver-based staffing agency Remy Corp., also said he was surprised by the change but is hopeful that it will work out for the best. The shakeup came just one week after PeopleSoft's annual user conference, where Conway made the rounds with customers. "I've spent more time with Craig in the past week than I ever had before," Albarelle said. But he added that he sees Duffield as a good leader for the company.

Other users, as well as some analysts, raised the possibility that Conway's firing could pave the way for PeopleSoft to capitulate to Oracle Corp.'s 16-month-old hostile takeover bid. Conway, a former Oracle executive himself, had vociferously opposed even entertaining the thought of selling PeopleSoft to his former employer.

"Sitting on the outside, the first question is if Conway was

thrown under the bus to prevent further erosion of the Oracle bid price," said Robert Robinson, business systems supervisor at Durr Industries Inc., an automotive supplier in Plymouth, Mich.

But during PeopleSoft's teleconference, board member George "Skip" Battle said the ongoing struggle with Oracle had nothing to do with Conway's removal. He noted that PeopleSoft's transaction committee, composed entirely of independent directors, has unanimously rejected all of Oracle's offers and was never at odds with Conway on the takeover issue.

"The very simple and plain reason is that over time, the board has been concerned about Craig's leadership," Battle said. "There was no smoking gun, no accounting irregularities."

"Obviously, organizations go through stages, and I think Craig brought some focus, and that was needed," said Jeffrey Weiler, chief financial officer at Gwinnett County Public

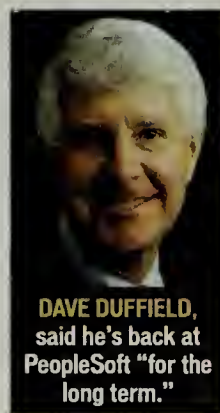
Schools, a PeopleSoft user in Lawrenceville, Ga. But Weiler said that with Duffield running the company again, PeopleSoft will likely become more customer-focused than it was under Conway. That could give PeopleSoft a competitive edge as it tries to fend off Oracle's bid, he added. "It could help differentiate them."

### Uncertain Future

Oracle Co-President Charles Phillips declined via e-mail to comment about the changes at PeopleSoft, which also promoted Chief Financial Officer Kevin Parker and Executive

Vice President Phil Wilmington to new positions as co-presidents.

PeopleSoft also said on Friday that its third-quarter software license revenue topped \$150 million — a level that pleasantly surprised some financial analysts, who



DAVE DUFFIELD, said he's back at PeopleSoft "for the long term."

had expected worse after PeopleSoft missed its second-quarter sales target and Oracle reported just \$69 million in business applications revenue in its latest quarter.

But Charles Di Bona, a Wall Street analyst at Sanford C. Bernstein & Co. in

New York, said he sees continued problems at PeopleSoft — ones that go deeper than the confusion created by Oracle's bid. He noted that the \$150 million in software revenue is 9% lower than last year's third-quarter sales figure.

"I think a large part of the loss of confidence [in Conway] really is more around the J.D. Edwards situation than Oracle," Di Bona said, referring to PeopleSoft's problematic integration of former rival J.D. Edwards & Co., which it acquired last year. "This is not a growing company; this is an ailing company."

Paul Hamerman, an analyst at Forrester Research Inc., said Conway did instill a more businesslike attitude at PeopleSoft, which was losing money

when he took over as CEO. But over time, Conway focused too much on the bottom line and alienated many users, Hamerman said. He added that after moves such as increases in software maintenance prices, "the customer noise level grew to the point where [Duffield] had to step in."

Jim Prevo, CIO at Green Mountain Coffee Roasters Inc. in Waterbury, Vt., said he's glad to have Duffield back. "He made me feel personally valued by PeopleSoft," Prevo said. On the other hand, he added, Conway "seemed to be all business."

Duffield's style also might help reassure PeopleSoft employees worried about job security, said Bruce Richardson, an analyst at AMR Research Inc. PeopleSoft "needs someone to rally the employees," he added. **49819**

Stacy Cowley and Laura Rohde of the IDG News Service contributed to this story.

### MORE ONLINE

Visit our Web site for special coverage of Oracle's ongoing bid for PeopleSoft:

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Continued from page 1

## UDC

ization and utility computing at HP, confirmed that the "big UDC" is no longer available.

UDC components will be sold separately to "get way more sales ... to smaller customers," Van der Zweep said. "The wrong thing to think is that we are de-investing in utility computing by modularizing the parts."

However, one result of the shift is that about 100 HP workers tied to UDC will lose their jobs, with another 100 being shifted to work on the modular offerings, he said.

"HP really did close UDC down, but they are trying very

hard to spin it otherwise," said Gordon Haff, an analyst at Nashua, N.H.-based Illuminata Inc. "They are concerned that it's embarrassing to say UDC is closed and that people will take the news as meaning HP's virtualization efforts are a failure."

### Ahead of Its Time?

To the contrary, Haff said he believes that UDC was a pioneering effort in utility computing technology when it was introduced in 2001 and that HP continues to have solid offerings, such as its blade server virtualization systems.

"UDC as an all-singing and all-dancing product was really more than people were looking for, frankly," he said.

Tom Reinsel, president of the independent OpenView Forum International user group for customers of HP's enterprise management software, said he's pleased by the company's change in strategy on UDC. "Modularization of UDC is good," said Reinsel, who is also CEO of Pepperweed Consulting LLC, an Indianapolis-based company that resells HP's software and does systems integration work.

Reinsel said many customers he spoke with regarded UDC as "a visionary idea" but weren't inclined to "rip out all their hardware and put in UDC." Even testing the technology was expensive, he said, citing his experiences working with two customers

that had installed UDC.

The original UDC offering included components such as a network operations center, a rack of management tools that monitored available data center resources, capacity planning and optimization software, and a disk array.

Van der Zweep said HP had

**UDC as an all-singing and all-dancing product was really more than people were looking for, frankly.**

GORDON HAFF, ANALYST,  
ILLUMINATA INC.

"dozens" of UDC customers, who on average spent between \$1 million and \$2 million for the technology.

But Haff said the external user base was probably 10 to 20 customers, with the others consisting of units inside HP. "UDC as a specific product was not successful," he said.

"It was too big of a chunk for people to bite off and chew," said Rich Ptak, an analyst at Ptak, Noel & Associates in Amherst, N.H.

In a report about HP's new strategy, Gartner Inc. analysts Donna Scott and Tom Bittman said the company "realized it could not make a positive return on its investment in UDC without changing course."

**49774**



FRANK HAYES ■ FRANKLY SPEAKING

# Farmshore Future

**K**ATHY BRITTAIN WHITE HAS A DREAM. She figures if U.S. CIOs will ship programming jobs to India to save money, maybe they'll ship them to rural Arkansas instead. So White's company, Rural Sourcing, is setting up outsourcing centers in places in the U.S. where the cost of living is low — not as low as in Bangalore, but low enough to compete with the total cost of offshoring. White also plans to get her programmers up to a high process-maturity level like those offshore programming shops (see story, page 14).

Low costs, high quality — and it's onshore. For CIOs thinking about offshoring, this really does sound like a dream. For programmers worrying about their jobs, welcome to your new nightmare.

By transplanting the offshoring model to the U.S. boonies, White is wiping out most of the emotional and political arguments against IT outsourcing — the ones anti-offshoring groups have pinned their hopes on. These U.S. jobs aren't being shipped overseas — they're being shipped to the U.S. The income tax revenue from these jobs doesn't disappear — it just comes from a different state.

Meanwhile, on the business end, White's approach hits the competition where it ain't, resolving the thorniest offshoring troubles. And as a former corporate CIO herself, White knows where all the pain points are.

Cross-cultural confusion? Transnational legal questions? Lack of direct communication? Time-zone differences? Those issues are pretty much unavoidable when programming work goes out of the country. When the work goes out to the country, those issues are pretty much nonexistent.

These problems have spurred some CIOs to bring IT jobs back from overseas. They're not just annoyances; they jack up the cost of offshoring and reduce the chances of success for an offshored software project. So if White's plan works, it will be a real alternative to offshoring — an alternative that actually gets rid of some of the grief offshoring generates.

Wait, it gets better, at least if you're a CIO. If White's Rural Sourcing is successful, it will expand and spawn imitators. This new "farmshoring" crowd will start to soak up the outsourcing business that companies in India, Russia,

China and elsewhere were expecting to grab.

The offshore companies won't take that lying down. They'll beef up their offerings, improve their quality and expand their services, working to make offshoring worth the trouble.

That, in turn, will push the farmshorers to improve *their* offerings. And the cycle will continue, with the ante raised each time. That's exactly what competition is supposed to create: more choice, better deals, a buyer's market. And it's a beautiful thing if you're a customer.

Of course, it's not so beautiful if you're a programmer whose job is already at risk of being outsourced. If Rural Sourcing succeeds, your fate is sealed. Even if farmshoring doesn't make sending your job away attractive enough, it will start a race that will eventually make your situation impossible. Keeping most pure programming jobs in-house just won't make economic sense.

So now the clock is ticking for you to make a choice. You can start working to shift away from pure programming to an IT job that's a lot harder to outsource — for example, one that involves lots of hands-on work or face time with users.

Or you can move up the stack to a job that involves more business analysis, so you're writing the specifications those farmshorers will be turning into code.

Or you can get out of IT.

Or, just maybe, you can head for the country and look for your next programming job there.

That may not be what you've always dreamed of. But it's a lot more feasible than following your job to Bangalore. ☎ 49758



FRANK HAYES, *Computerworld's* senior news columnist, has covered IT for more than 20 years. Contact him at [frank\\_hayes@computerworld.com](mailto:frank_hayes@computerworld.com)

## Starting the Day Right

This sysadmin's day begins with a user's e-mail howling that his user ID has been deleted. "And he cc'd a lot of management types," says fish. Then the phone rings, and fish finds himself in conference call with his boss and all those managers. Fish quickly checks the user's status. "I tell them the user not only wasn't deleted; he had not logged on in three months," fish says. "Then he used the wrong password five times, disabling his user profile. I reactivate and reset him — and my boss says I no longer need to be on the call."

### Oops!

Newly promoted IT manager hears a worrisome sound: a

**SHARK TANK**

the other company handle their orders."

### Why?

constant beeping that seems to come from the primary server. "I called the vendor in a total panic to describe the sound," fish says. "They were completely baffled, since nothing in that server beeps." Two hours of frantic calls later, fish checks the server again. "I discovered that something was left on a keyboard on an adjacent machine, causing the beeping," he sighs. "I had to sheepishly call the vendor — and reveal my mistake to the rest of my staff."

Project manager pilot fish quits suddenly at this big health care company without giving much notice, but her director talks her into staying on part time for six weeks to ease the transition. OK, fish agrees. And then? "Two weeks into my part-time status, the director asks that I submit a weekly form," fish sighs. "One detailing my activities to justify my position."

### Checkout Time

This grocery chain's buyers receive lots of electronic freebies — TVs, VCRs, handheld computers — that are routinely stored until they're given away in promotions. So when a pilot fish is looking for a wireless router to set up at an executive's beach house, he remembers a box among the free gear that has been sitting in a corner for the past year. "We opened the box," fish says. "Inside was not the router, but two jars of aged cheese. No one had thought to actually open the box and check the contents."

## The Cost of Y2k

It's 1999, and this IT pilot fish at a box company is working feverishly on the Y2k project. But it's not done yet, as fish must regularly tell customers who ask. "One customer canceled orders and placed them with a competitor," fish says. "That competitor contracted the work out to us, since smaller orders are our niche. We ended up making all the boxes anyway — but the customer now had a hefty markup for having

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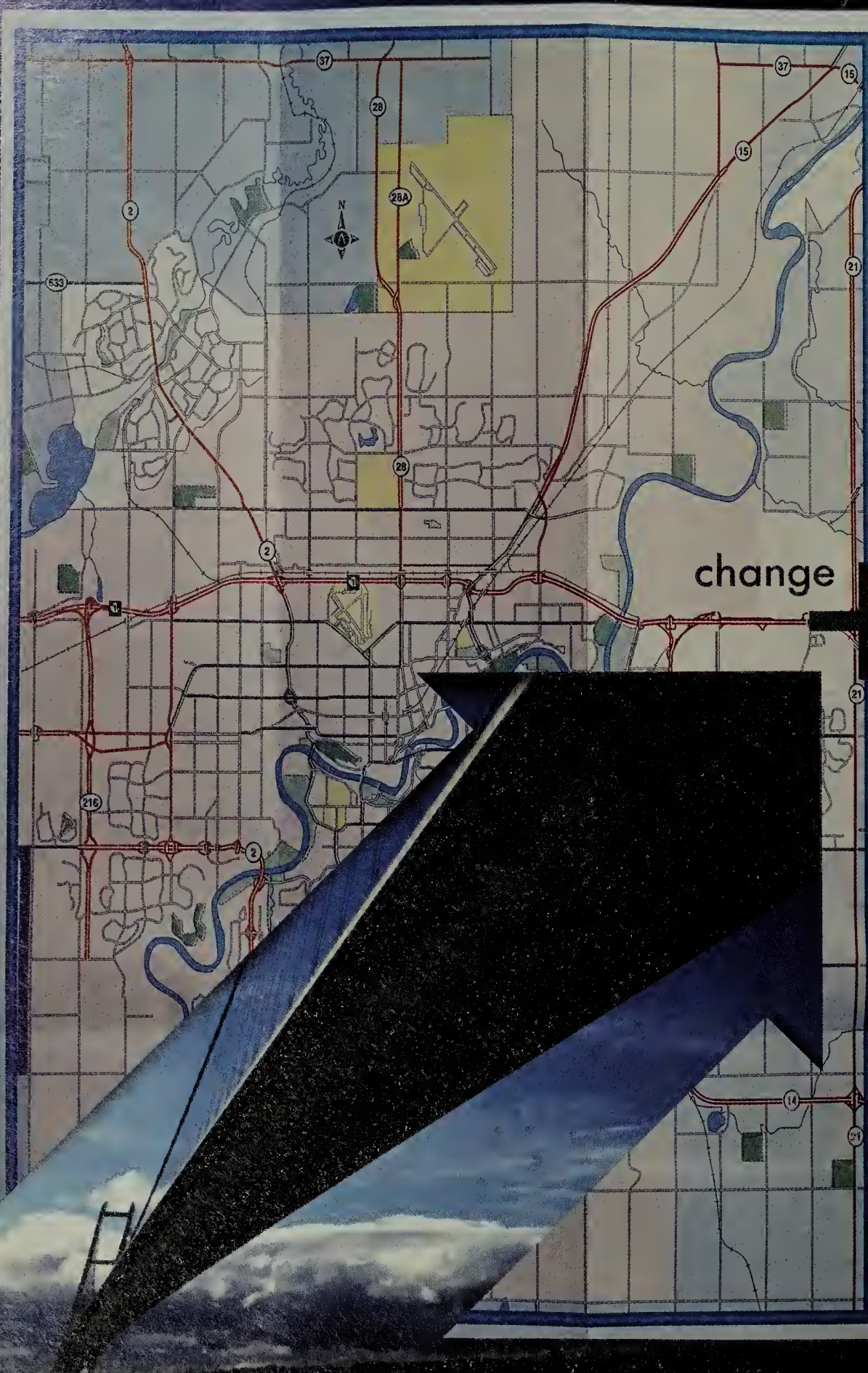
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